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# The Crucible of Flight

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by

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# PREFACE

The discovery of the laws of flight and their subsequent embodiment in a heavier-than-air craft is one of those critical events, like the smashing of the atom or the telephonic linking of the continents, which alters forever the quality of daily life in marked, irreversible ways. Like any such event, it represents not only the product of a particular individual genius but also the culmination of several contributory forces both individual and shared. As such, its roots wriggle deeply into a rich, contextual wellspring of nurturants.

If it is the task of a student to trace this web of roots from its nurturant sources to the fruit on the vine, then I must say I have not been wholly comfortable with the assignment. For I have chosen to dig where the ground looked most virgin, and as virginity so often shades into infertility, I have had some fear that the fruit of the world's first airplane would prove little in debt to those roots I might unravel.

The Wright brothers were so unlike other early "aeronauts" in their background, their habits, their values, and their personal style that I have been fascinated with the fact that they were ever interested in flying at all. The fascination sharpens when one considers that the difference between them and their competitor/colleagues may well have been the difference that crowned them ultimately with success. My dig into the wellspring, therefore, has been an investigation of those familial and personal forces which set the Wrights apart, which drove them against - and eventually over - the conventional sands around them, and into the universal dream of manned flight.

In this respect the Wrights have made for some hard digging. They regarded introspection as irrelevant at best and possibly even destructive of the efficient pursuit of useful goals. They mistrusted the "inner life" of feelings and motivations and felt that such things were in the main best left alone. They followed a straight path of sober and simple living, formed no real intimacies outside the family circle, and guarded their story - their history, as fame transformed it - against inquiries such as this. It was in fact through their guardedness and their frequent collisions with others that sparks enough were generated to illuminate some of the more private corners of their characters. Yet for the most part those who met them casually found them prosaic, unassuming, quiet, deferrent - even boring.

The Wrights had less of a sense of their own historical importance as persons than they had of the airplane itself. Their valuation of what they had done was therefore both a modest and a narrow one. It is largely through the perspective of older men such as Octave Chanute and the Wrights' own father, Milton, that we possess any written record at all of the brothers' pains and joys during the birth of what they called simply, "The Flyer". That record - from the ascetic dunes of the Carolina shore in mid-winter to the opulent machinations of international finance - is in many ways a parable of the American Dream, bursting forth with hope and clarity, suffering and slogging through the tepid satisfactions of compromise, and awakening with aches and pains to the reality of older, more complex truths.

In shaking out what I have unearthed along this line, three major root forms have emerged. One is the Wright family, another is made up of both the friendly and adversarial ties the Wrights developed outside the family bond, and the last is at once the most difficult and most central - the fraternal bond between Orville and Wilbur, the strands of their individual characters wrapped inextricably around it.

I have been mindful in this study of a recent experience on the Outer Banks, just east of Big Kill Devil Hill. I grew curious as to how the small clumps of dunes grass could survive the elements there, and so I started digging around a lonely-looking and meagre specimen about a foot high. Very close to the surface, and in contrast to the vulnerable growth above, was a circle of thick, obstinate roots extending in all directions and travelling outward to catch whatever sustenance might leak through the sand. As I kept digging, the circle widened until, at about six to eight feet in every direction from the center, I despaired of ever unravelling the whole resistant mass. I followed a few strands for another few feet and then just broke them off so I could take the plant home as a "souvenir". I still feel bad that I did not get the whole thing.

I think that is an adequate parable of this manuscript. I would only add that for better or worse I have been far more captivated by the roots than by the fruit, and I trust that the distortions thus produced will be useful to those who can focus them in some larger view of the history of aviation.

# THE FAMILY CRUCIBLE

Modern readers have acquired a certain sophistication about intimate relations and about the dynamics of family life, and therefore tend to observe others, historically or otherwise, against a background of contemporary sociological and psychological thinking. Lest we take this background for granted it is instructive to review just a piece of analysis by past observers of the Wright brothers, for they too carried around their own assumptions about the nature of human motivation and achievement.

> "The brothers were fortunate in both their ancestry and upbringing, which provided them with high qualities of intelligence, morality, and practical inventiveness. On their maternal side, there was predominantly German and German-Swiss blood, while on the paternal side there as good Dutch-English stock, the women on both sides of the family fully matching the men in moral fibre, and in expertise upon the practical business of living successfully in a young and rapidly growing nation." [1]

We see here such assumptions as the linkage of racial or national lineage to the quality of achievement, the generally innate moral and productive inferiority of women (to which the Wrights' ancestors were exceptions), and the inheritance of acquired traits. In a culture still largely agricultural it was important to be sired from good "stock", and the mechanisms of heredity served as omnibuses for character development.

Yet my purpose must not be to generate gratuitous embarrassment for those beyond the grave, and therefore beyond embarrassment. Rather, I should wish to air my own assumptions about the development of the "fathers of flight" so that any future readers might at least credit me with a self-consciousness about the whole effort to explain character.

My first and most central assumption is that what the Wright brothers <u>did</u> was very much a function of who they <u>were</u>. That is to say, the pursuit and capture

of the airplane was a process fueled not only and not even most importantly by its intrinsic worth, but by a complex of needs, energies, and aspirations in the Wright brothers which constitute what we generally think of as "personality". Additionally, the way in which they did what they did was determined not only by the practical demands of the task, but also by their whole perception of events, their fears, their expectations, indeed their own working assumptions about why people do what they do. Put simply, I am making a case for the validity of broad motivational factors in human achievement, and for the influence of both explicit and assumed ("unconscious") perceptions on the outcome of seemingly straightforward tasks. To my mind, for instance, one cannot explain adequately the Wrights' edgy isolation from the early aviation community solely on the basis of the need for secrecy in marketing their invention, or by some desire for monopolistic opulence. One needs to look at their lives in a much more truly historical and personal perspective to formulate workable hypotheses.

In this perspective lies the second assumption, which is that patterns of motivation, of achievement, of relating to others, of defining one's path through life - all this is very profoundly affected and shaped by one's experience in the family crucible. I am not making a case for familial determinism - only for the powerful role of the family as shaper and midwife to some very crucial outlooks and values. In the Wright family, for instance, we shall see how positive values adhered to a sense of moral isolation, how adversity offered grounds on which intimacy thrived within the family circle at the cost of withering outside of it, and how the Wrights' entire perspective on legal and patent matters was inextricably colored by the family experience with litigious morality and church politics.

My third assumption has been that such matters as those described above cannot be observed directly, as could, for instance, the first flight itself. Rather, they can only be inferred from personal letters, diaries, behaviors, etc.

Therefore the "epistomology" of this history is an inferential one, and my "observations" will perhaps ring with the half-tones of opinion as well as the clarity of measured conclusions. I will try to mute the former and amplify the latter, so far as I am able to discern the difference. Upon that ability rests the credibility of my observations, and the ultimate worth of the whole analysis.

We shall look first at the larger Wright family, which included the parents, Milton and Susan, and the older brothers Reuchlin and Lorin, and then we shall focus on what is often regarded as the functional Wright family core emerging after the older boys left home in the 1880's for college and marriage, and after Susan died in 1889 - Milton, Wilbur, Orville and Katherine.

The patriarch of the family, most influential in shaping its structure over the years and passionately committed to the virtues of domesticity, was Milton Wright. For accounts of his life we are largely indebted to his career as minister and bishop in the United Brethren Church, an offshoot of the Mennonites. Church chroniclers have preserved the story of Milton's family, which serves as an account not so much of "fact" but of the powerful role of religious faith in the lives of pioneer settlers.

THE WRIGHTS

Milton's ancestors had come from Essex, England, arriving in America to settle in Springfield, Massachusetts in 1636. Several generations later, Milton's grandfather, Dan Wright Sr., left his home in Orange County Vermont, taking his wife Sally Freeman Wright and their family out west to Montgomery Ohio. Dan Sr. was in the Wright tradition, neither an urbanite nor a man of commerce, but rather a solid man of the interior, of the quiet and regular cycles of soil and farming.

It was in Montgomery County that their son Dan Jr. met and married Catherine Reeder, a descendent of the first settlers in the Ohio valley in the late 1790's.

Catherine's uncle - Benjamin Van Cleve - was the first man to have a marriage recorded in the city of Dayton, in August, 1800. Benjamin's sister Margaret (Catherine's mother) George Reeder, an innkeeper in Cincinnati.

Dan Wright Jr. and Catherine Reeder were married in Centerville, Ohio, in 1818. They had two sons early in their marriage, Samuel in 1819 and Harvey, about 1821, and moved three years after their marriage to an 80-acre tract of government land in Rush County, Indiana. Many of their fellow settlers in Rush County were Kentuckians from just over the border who brought with the manners of the Appalachians and, generally, very pro-slavery attitudes. There were Indians also in Rush County at the time, but relations between them and the white settlers were peaceable. The life style of all these pioneers was the one familiar enough to us - harsh, simple, full of hard labor and long hours, monotonous to a large degree, with satisfactions coming few and far between in the form of a crop reward for well-cleared and cultivated land, the warmth of a solidly built home in the winter months, the regular appearance of new babies who managed to survive the perils of 19th century infancy on the frontier, and the relief of keeping hunger and disease from the door yet another year.

In 1824 the only daughter was born to Dan and Catherine, Sarah Wright. Sarah married at the age of nineteen a Charles Harris, and left him with ten children when she died twenty-five years later in 1868.

Four years after Sarah, Milton was born and he was followed in three years by the youngest of the five children, William.

Something of the character of Milton's brothers - and something of the nature of the record - has been captured by H.A. Thompson, an official of the U.B.C., in his 1889 book "Our Bishops: a Sketch of the Origin and Growth of the Church of the United Brethren in Christ as Shown in the Lives of its Distinguished Leaders."

Of Samuel he wrote,

> "In physical and mental powers he was probably endowed beyond any of the family. It was generally predicted that he would be a minister; but by a fatal fever prevailing in the region where he was teaching, he was cut down in eight days. His death-bed was the scene of the grandest Christian triumph."[2]

And of Harvey,

> "To his advice the bishop probably owes more than to any other person his early desire and efforts for careful mental improvement. He married well and has a large family. He has done well financially, and is living on a fine farm. He is an able and well-gifted Baptist minister of the old school, and is well-known in his church, throughout his state, and in neighboring states. He was the most gifted of any of the family in speech."[3]

And finally, of William,

> "William was over three years younger than (Milton). He was his playmate, school-mate, church mate, and conference mate. He was meek, diffident, faithful, affectionate, and from his childhood uncommonly good, even for a good boy. From his youth to maturity his complexion and features resembled those of a handsome little girl. In his manhood he was large and fine-looking. An attack of dyspepsia so impaired his health that his wit in conversation and public speech were never fully regained. He had great amiability of disposition and meekness of spirit. When he died, he lifted his feeble hand, and, with his feeble voice, his eyes bright with joy, exclaimed, "Jesus! Jesus! home! home!""[4]

From his birth on Nov. 17, 1828 through his 11th year Milton lived in that rough territory near the Kentucky border. We have no direct record of his relations with his brothers and sister, but one can infer that in the isolation and even cultural loneliness of Rush County they were all drawn closely together. The above account by Thompson was obtained in interview with a then elderly Milton Wright, and while discounting the perhaps overzealous Christian reconstruction, we have no reason to think that the Wright siblings were not indeed as close as Milton says they were. At the same time, we should not be too quick to discount what was a most powerful and formative religious atmosphere and belief system in the Wright home. Dan, the father, was an avid anti-slavery man, refusing to join any particular church in spite of his strong Christian beliefs because he did not

think that any of the churches took a vehement enough stand against slavery. He was equally forceful in his views on alcohol, and refused to sell his grain to distillers because he abhored the product of their labors. This was in spite of (or perhaps because) he himself had worked in a distillery prior to his marriage to Catharine. Young Milton thus faced on a daily basis the contrast between his father's strict moral uprightness and the rough-hewn, pro-slavery feelings of the neighboring Kentucky moonshiners.

Of equal significance for Milton's future career was his father's stand against secret societies, which at the time boiled down to the Freemasons. Milton and his schoolmates clashed often on the slavery issue, and gave voice to fears that "saucy free Negroes might come to their neighborhood if slavery should be abolished."[5] But the strictness of the Wright home would brook no tolerance of such fears or any other obstacle in the path of righteousness, and young Milton learned at an early age how to stiffen his back in the face of opposition and doubt.

In 1840 when Milton was 11 the family moved ten miles away from their settlement to a new home in Fayette County, Indiana. The schools were better in Fayette and Milton had access to both public and private libraries which he used avidly. He read every book he could find time for, leaving his schoolmates far behind in what amounted to an independent course of study. He became interested in politics when his father supported the anti-slavery Liberty Party in the 1840 election and he read all the campaign literature. He became absorbed in oratory and declamation, and would go off into the woods to deliver speeches to imaginary audiences. He was also active in a debating society during the indoor winter months in his teen years.

It was perhaps inevitable that, like his older brothers Samuel and Harvey, Milton would be led by his deep involvement in issues of morality and suasion

into the ministry.

> "In June, 1843, when he was fourteen years old, Milton was converted when at work alone in the field. No revival was in progress and no special evangelistic appeal had been given to him. When a child of eight his mother had talked with him about being a Christian. That conversation was never forgotten. He learned to pray as a child. He attended church services regularly and listened attentively. In his conversion experience there was no sudden revolution from great anguish to ecstatic joy. To him conversion meant simply the sense of belonging to God, soul and body, all that he ever was or ever hoped to be."[6]

We see in the nature of his conversion that Milton was by his early teens a young man of considerable emotional control, self-disciplined in his expressions, and of quiet, unassuming determination and even absolutism in his ideals.

Milton's mother remains, like so many women of her day, a background figure, self-sacrificing and quiet, perhaps a bit more patient and tolerant than her strongly-opinioned husband, but probably of no less sturdy an outlook. If children can be taken as products from whom inferences can be drawn as to parentage, Dan and Catharine's home was one where love and warmth prospered so long as the trip-wires of moral controversy were not set off by an errant opinion or action. This sort of moral rigidity and fundamentalism was not unknown on the frontier - indeed it prospered there - where every man threatened to become a law of some sort or another unto himself, unbounded by enforceable convention or the pressures of village conformity. Here, dogmatism did not imply a punitive or cruel family climate, but represented the psychology necessary to push a form of civilization through a stubborn and dangerous wilderness. That psychology, and morality, had to be strong, unswerving, impatient of questioning or deviance, and preoccupied not so much with free or individualized growth (this is really our wishful thinking about frontier life, to a large degree), but rather with predictable, controlled, tightly disciplined growth. It was the metaphoric imposition of neat and well-planned rows of crops over the random bramble and briar of the wilderness, and

it had its effects on child-rearing as well.

Of Milton's relation to his mother we have only the dear and predictable piety that

> "To his mother more than to any other influence the Bishop owed his deep religious impressions. She was an affectionate mother, self-sacrificing in her attitude toward her children. She was deeply concerned about their spiritual interests, always willing to give time to talk to them of spiritual matters and to pray with them. She was a member of the Methodist Episcopal Church but would have preferred to belong to the Presbyterian Church if she could have found a local church of that denomination in her community."[7]

Catharine died in 1867 at the age of 67, the year her third grandson from Milton, Wilbur, was born. Her husband Dan had died six years earlier in 1861, age 76, the year in which Wilbur's oldest brother Reuchlin was born.

Milton's adolescent energies after his quiet conversion experience took expression increasingly in intellectual effort.

> "About his sixteenth year he began to train his mind to steady, continued, and systematic investigation of subjects. In this he was a rigid disciplinarian. Continuity of thought, at first difficult, at last became almost involuntary, and sometimes he had to rest his mind by some expedient to draw it from its labors."[8]

Like his father, Milton could find no church whose doctrines fitted comfortably enough the stringent requirements of his ideals, and so he joined no church until he was eighteen. He had considered Methodism, but rejected it because he felt its members were too concerned with having a "popular" church and not enough concerned with purity of purpose. Perhaps that was his mother's objection as well. But having mastered the tyranny of popularity and peer pressure back in his Rush County years among the Kentuckians, Milton felt no need to "belong" or fit in to any group's belief system, and the rigor of his intellectual self-discipline granted him a certain sense of confidence in placing his own beliefs

apart from - and possibly above - those of others. It was neither uncomfortable nor unusual for Milton wright to line up against the grain.

In 1847, at age 18, Milton attended a series of services conducted by Rev. John Morgan, a preacher in the United Brethren Church. He had known Morgan for many years and had been impressed by his simplicity and honesty. (In evidence of those traits, one notes that official histories of the U.B.C. have nothing to say about John Morgan save that he was a devoted preacher who served unassumingly until his death in 1889, having traveled the preaching circuits of Indiana for 68 years.) Impressed by Morgan's example, Milton decided to join the U.B.C. one Sunday morning. He was baptized by immersion at a meeting held at his father's home two months later.

During the next 9 - 10 years Milton taught in the public schools in Indiana and attended Hartsville College, a U.B.C. school, for a time. He never finished his course of study at Hartsville, but it was here that he met Susan Catherine Koerner, a fellow member of the U.B.C. and a student of literature at the college, who 11 years later would be his bride. But at this time Milton was slowly moving into the ministry. After some preparation he was allowed to preach his first sermon, on his 22nd birthday, Nov. 17, 1850. Less than a year and a half later he was granted a full license to preach. Another year and a half followed, and he was admitted to the White River Conference ("conferences" were geographic subdivisions of the church, like parishes). And two years after this, in 1855, he accepted his first assignment as an itinerant or curcuit preacher. He rose rapidly in the White River Conference, was elected secretary of that group in 1856, and in the same year was finally ordained minister and appointed pastor of the Andersonville circuit, covering much of the Indiana countryside where he had grown up. This proved to be a difficult assignment for the young clergyman, as his predecessor had left a rocky trail of controversy by joining the Masons in

violation of church rules, by then denying the fact to his peers in the church, and when it became obvious that he was indeed a Mason, by leaving the church altogether. The 1849 quadrennial General Conference of the U.B.C. in Germantown, Ohio had ruled:

> "Freemasonry, in every sense of the word, shall be totally prohibited, and there shall be no connection with secret combinations; (a secret combination is one whose initiatory ceremony or bond of union is a secret); and any member found connected with such society shall be affectionately admonished by the preacher in charge, twice or thrice, and, if such member does not desist in a reasonable time, he shall be notified to appear before the tribunal to which he is amenable; and, if he still refuses to desist, he shall be expelled from the Church." 9

It had perhaps been no accident that church officials had given this assignment to the solidly anti-Masonic Wright, but they did not keep him at it long. In early summer of 1857 the young minister was assigned to duty in far-off Oregon. At that time the Pacific coast was remote, difficult to reach, and relatively uncharted by the U.B.C. It was sufficiently so to be considered mission territory. Milton sailed to Panama from New York, then through Panama by rail, and up the coast by sail again to the Oregon territory. While passing through Panama he contracted some disease (possibly malaria) which was severe enough to prevent his assuming regular pastoral duties upon arrival. He recuperated in Salem with friends during the remaining summer months, and in November began to teach in a church school, Sublimity College, in the Williamette Valley. Within a year his health had improved enough for him to take on part-time pastoral work in the Marion curcuit, for which Sublimity College provided a large part of the congregation. Additionally, he was named principal of Sublimity and given the aid of an older assistant, a J. Kenoyer. As 1858 drew to an end, Milton's longing for his home and his sweetheart Susan in Hartsville grew to aching proportions. He had always been surrounded with a warm family and did not take well to the isolation of the Oregon region. Moreover, at thirty years of age he was, in his

regular and sober way, thinking of a family of his own. He had maintained an active correspondence with Susan through the mail, and she had responded equally. He turned down the offer of a third full year in Oregon, and accepted a small assignment as pastor to the Calipooia Mission for a few months on proviso that he would be sent home at the end of this time.

He returned to Indiana via the sea route and Panama Railway to New York, and on Nov. 24, 1859, one week after his 31st birthday, married Susan Koerner. Susan was 28.

There is no evidence and no reason to think that either Susan or Milton was ever romantically involved prior to or after their first meeting. Certainly the earnest and self-disciplined young minister was not party to many social frivolities, nor would his disregard for convention and popularity have propelled him into affairs of the heart. He seems to have centered on Susan from their first meeting at Hartsville. The qualities in a woman that appealed were such as would be found in the ideal wife of a midwestern farmer at the time - constancy, level-headedness, sobriety, meekness, patience, warmth, and quiet self-sacrifice. Susan was this, and bright in addition. Yet if she was ever courted by anyone other than Milton, or if she ever thought of anyone else during their lengthy ten-year courtship, the secret has died with her.

Two central features of future Wright family life were in fact set down in this courtship period for Milton and Susan. First was the idea that Milton would be a reluctant traveler, but a traveler nonetheless, dutily and steadfastly devoted to the mission of his calling. Second was the notion that regular, self-disciplined use of the mails would be a most important means of bonding family intimacies and sustaining the hearth's warmth across long distances. A third, more subtle feature was the implicit self-sacrifice and self-denial required to endure

the frustrations and rigor of a "higher calling", and the equally implicit assumption that one's loved ones should not be expected to do less.

Susan Wright is perhaps the single most vexing mystery in the genesis of the famous Wright brothers. None of her letters has survived, and the Wrights themselves, always reluctant to talk with interviewers, were notoriously reticent about family information, feeling that such revelation was unseemly or even improperly violating of the sanctity of the home. We can infer that Susan was a patient woman, willing to endure hardship without complaint, and she was a quietly dominant emotional force in the family. At one point several years after her death, Milton had occasion to wish that his sometimes querulous daughter Katharine could be more like her mother.

> "If she had inherited some of her Mother's love of quiet and solitude, she might 'flourish like the palm tree', for she has a fine constitution." (10/11/07) [10]

Susan was born in Hillsboro, Virginia on April 30th, 1831, the youngest of five children to John Koerner and Catharine Fry Koerner. John designed and built carriages and was apparently an excellent craftsman, as he acquired a reputation for high-quality work. He had emigrated from Germany to the U.S. in 1818, was able to make a good living at his trade in America, and eventually married Catharine, an American-born woman of Swiss background. Little is known of John and Catharine, except that they moved west during Susan's girlhood, settling in Hartsville, Indiana, and later moved to Union County, Indiana where John continued his carriage business. John was a member of the U.B.C., as was daughter Susan. Like her future husband Milton, Susan too had undergone a significant religious experience at the age of 14 which prompted her to formalize her membership in the church. Young Susan evidently picked up some of her father's mechanical ability, for she was apt enough with tools to be able to do most of the repair work around the house when her own children were growing up. She built a sled for the

two oldest boys, Reuchlin and Lorin, and she designed and made all her own clothes. She is said to have been at all times a well-dressed woman, [11] and her two youngest children, Orville and Katharine, were always careful dressers.

Susan encouraged mechanical inventiveness and experimentation in her sons, and was tolerant of their efforts even at the cost of her own inconvenience. She was forgiving one day when young Orville decided to "help" her by filling an old oil can with water and "oiling" her sewing machine. She allowed the use of her kitchen for Orville's early printing work as well.

In Susan Milton found the strong, constant maternity he felt so important in a preacher's home and in his own life. There is nothing to indicate that there was ever any serious conflict between them. He made no efforts to restrain or modify her dominion over the household, and she made no effort to interfere with his church duties. They seemed simply to agree on what was important in the home and they struck a compatible balance. Even towards the end of Susan's protracted and eventually fatal struggle with tuberculosis from 1885 to 1889, she expressed demands on her husband in a very modest and moderate fashion. She sent word to Milton through 21 year-old Wilbur (who nursed her almost 'round the clock during the last two years of her illness) that

> "Mother thinks that while it is not absolutely necessary on account of her health that you should return before your time is up, yet she would feel more comfortable if you were here." (8/23/1888)[12]

Susan Wright died just over ten months later, on July 4, 1889, and was buried in Woodlawn Cemetery in Dayton, to be joined there at various points in succession over the next sixty years by Wilbur, Milton, Katharine, and Orville. Milton was deeply pained by her death. He referred to his sense of loss and emptiness in letters to his children and, many years later, the anniversary of Susan's death remained a poignant time for him. To Wilbur he wrote in 1908:

> "I went to your Mother's grave this forenoon, and laid a little bunch of flowers on her grave. Nineteen years ago she departed. Of course I miss her most. Her benediction rests on you. She was so humble, cheerful, meek, and true..." (7/4/08)[13]

The Spring and Summer of 1889 had been a most difficult one for Milton. The 20th General Conference of the U.B.C., held in York, Pennsylvania, on May 9th, had culminated in a controversy over Church organization and governance which led to the secession of a group of conservatives (they were called "radicals" by the majority "liberals", under the moral and political leadership of Bishop Wright. Their protest was against what they saw to be "popular" liberal revisions of long-standing U.B.C. rules concerning the ban on membership in secret societies, and the restriction of lay representation at General Conferences. Milton had returned to Dayton and his dying wife in a storm of schisms and argument in which his refusal to compromise his beliefs had brought about a major structural division in the U.B.C. In addition, on August 1, nearly four weeks after Susan's death, his old role model and mentor John Morgan died, having sided in his quiet way with the majority who opposed Wright and his "radicals."

During this time of attack and dissension, the Wright family pulled together and Wilbur was especially useful to his father in writing pamphlets and tracts for publication in defense of the conservative position.

That Susan should have died at this time was most unfortunate for the family, but at the same time it bound them together in an even more fervent commonality and cohesiveness in which each played a different but complementary role. Wilbur was an intellectual and combative extension of his father, having functioned in large part as substitute for the preoccupied Milton during the long period of Susan's suffering. Katharine filled in quickly for her deceased mother in the care of the home and in the function of providing a constant maternal-like presence. And Orville carried on his industrious work with printing and, eventually, bicycle

sales and repair, providing a sense of busyness which the then goal-less Wilbur latched onto, and serving also as a kind of impish font of activity, the youngest in the group. But here we have perhaps gotten a bit ahead of our story.

Susan bore seven children in her 58 years, an accomplishment which in no way lengthened her life. The first was a boy, Reuchlin, born March 17, 1861 in Grant County, Indiana. Reuchlin maintained contact with the rest of the family until his death in 1920, but is perhaps the most distant and peripheral member. He took up farming in Kansas after what seems to have been an awkward struggle for independence - a kind of schism - from the family in his late teens or early twenties. In a 1907 letter to Orville and Wilbur, Milton suggested that Reuchlin's eldest daughter Helen was going through the same sort of struggle with her own father that Reuchlin had waged with Milton many years before:

> "Helen has declared independence, and has gone to town to work. Perhaps he (Reuchlin) has about the same experience with her that I had with him when he was about the same age, only I managed not to let him break away. After a year or two he became and remains most dutiful." (10/3/07) [14]

Susan had apparently tried to mediate the struggle between Reuchlin and his father, and she had been able to succeed to a degree. For when, years later, Orville and Wilbur went to Europe to sell their invention, Milton wrote them,

> "As long looked for, you are both far away, never to be much at home after this. But I follow Mother's plan, to say little about it." (8/4/07) [15]

At the time, Wilbur and Orville were 40 and 36 years of age respectively.

Next to nothing is known about Reuchlin's early years. As the first-born son he may have had a special relation to his father, which the latter may have soured slightly through over-control. Reuchlin attended Hartsville college, his parents' alma mater, around 1880. His younger brother Lorin joined him there and presumably both graduated within a few years of each other. There were only fifty students in the entire school. Reuchlin was not as correspondent as Lorin with the folks at home, but he did return to Dayton in the 1880's, where he helped his

father and Wilbur with publication of such U.B.C. organs as the "Christian Conservator" and the "Religious Telescope". He had trouble finding steady work in Dayton, so he left to seek his fortune in Missouri, and we pick up his trail in 1889 working for the South Missouri Lumber Company, and then around 1900 for the Kansas City, Memphis, and Birmingham Railroad Company. The occasion for a letter home around this time was Reuchlin's sale of some farm land that had been in the family for years. He had been given responsibility to effect the sale, but afterwards he worried that he had overpaid commission to the agent by $100, thereby reducing the sum that would be divided among all the Wright boys. Self-doubting and self-critical, he vowed to his father that

> "I shall therefore make up this hundred dollars to the children in our settlement for I don't want them to feel that their interests have been sacrificed by anything I did." (9/17/01) [16]

For the most part, Reuchlin's letters to home were addressed to his father and revolved around such distanced themes as politics (Reuchlin, like the rest of the Wrights, was a progressive Republican) and family genealogy. An air of resignation hung over him, an indication that dutiful adulthood had been purchased at the price of self-defeat and touchiness. His emotional relation to the rest of the family was heartfelt but also pained, sincere but overly formal.

One of the difficulties in Reuchlin's relations with the rest of the Wrights was his marriage to a rather shrewish woman, Lulu Bilheimer, around 1888. "Lou" felt that the Wright men in general, and hers in particular, lacked drive and ambition. She was critical and sharp towards her husband and there is evidence that she was hard on her only son Herbert as well. Following a visit to Dayton by Reuchlin, Lou, and their three children (Helen, Herbert, and Bertha) in the Winter of 1900-1901, Wilbur felt compelled to write her a lengthy letter regarding Herbert in which he said:

> "When you visited us last winter I soon noticed that the girls were a little disposed to move the boundary line between their rights and his, considerably over into what was justly his territory. I also noticed that this territory was more marked when his parents or either of them were present than when they played alone, as if they understood that they would be upheld in what they themselves would otherwise have admitted to be unjust. ...When I learned that you intended to put him into business early I could not help feeling that in teaching him to prefer others to himself you were giving him a very poor training for the life work you had chosen for him. ...I entirely agree that the boys of the Wright Family are all lacking in determination and push. That is the very reason that none of us have been (sic) or will be more than ordinary business men. ...You might say that (Herbert) ought to be more aggressive or that if he was really determined to be a great scientist or a great doctor or a great business man that he would find means to accomplish his end without assistance from his parents. But this is really saying that he must exercise talents he has not got, in order to get a chance to develop talents he really has..." [17]

It was by no means exceptional for Wilbur to have strong opinions, but it was extraordinary to take the step of - well, telling his sister-in-law how to raise her child. For reasons to be discussed later, Wilbur identified very powerfully with Herbert's dilemma, but more importantly here we see the impulse to protect a vulnerable person - a vulnerable Wright male - from excessive and unjust criticism. It would appear that Reuchlin married a woman who in some respects had excessively high expectations and was somewhat uncharitably critical of his efforts to make a life for himself and his family. Further, it is interesting that he should be somehow "blind" to the same dynamic operating on his son under his own eyes. Yet he was not so blind when it came to his daughter Helen, whose wedding he planned to boycott because he thought she was too young to marry. In October 1908, Milton (age 79) wrote to Wilbur,

> "Helen wrote me that she is to be married to George Russel, a student in the veterinary college, Oct. 14th. With her beauty and intelligence, she ought to be well married, if she and others have been judicious." (10/5/08) [18]

And to Katharine, then in Washington, D.C. with Orville, he wrote on October 7,

> "...I wrote Reuchlin today counseling and entreating him to be present at Helen's marriage. Absence would be a life-long blight to her, and a perpetual shade to him. And it is wisdom to make the best of a sad case. Probably, the community, too, sympathize with her." [19]

The issue was resolved, probably through Reuchlin's dutiful compliance with his father's counsel, in the following manner:

> "...Reuchlin consented to the marriage, provided they would wait two years, 'til he (George) had completed his studies in the veterinary college. Though he does not consent to the marriage, he gave his consent for them to be married at home. She is nineteen - of age in Kansas." (10/18/08) [20]

The marriage proved to be a lasting one, though there is no indication as to its happiness. Helen and George eventually moved to Hollywood, California.

Reuchlin remained "plugged in" to the Wright family largely through his father's devotion to the cause of family loyalty and integrity. It was through Milton's correspondence that Reuchlin stayed abreast of Wilbur's and Orville's achievements, and Katharine nurtured a sympathy for her oldest brother which, if it did not flower in return, kept him in the glow of her heart. Yet a certain distance could never be closed and Reuchlin felt, sometimes with justification, that the Dayton group was encroaching on his independence or questioning his judgements. He was predictably sensitive to implications that he might be less than competent in matters of business and other manly judgements, yet, as we have seen, he had a way of leaving himself open to just such reaction. Said Katharine in a letter to her father,

> "I'd like to do something for Reuch, but a person can't do anything to please him. He is suspicious of everything." (9/25/02) [21]

Following the sale of farmland mentioned previously, Wilbur wrote Reuchlin,

> "...Some matters connected with the sale seem to have worried you and led you to fear that we felt disposed to blame you for something. We have certainly had no such feeling. We saw after it was all over, just as you did, that if foresight had been equal to hindsight, we might have realized a little more from the sale, perhaps, but as we felt that any of us would have made the same errors, we had no disposition to blame you. ..." (5/20/02) [22]

With such mixed reassurances coming from the family circle, Reuchlin may have has some reason to feel "on the outs." And while we know nothing of his earlier years and his interactions with other family members as a boy, we have the adult picture of a man rather disappointed in himself, of modest but not exceptional

success, holding a courteous and moderate emotional investment in his siblings and a kind of dutiful humility towards his father, and struggling to establish his place in his own household as well as in the Wright family tree.

In 1902 Reuchlin and his family mobed to Tonganoxie, Kansas where he took up farming as a full-time occupation. His success here was quire variable, depending on vagaries of weather, insects, and the like, and he generally had a rough time of it. But he was resolute and thrifty with what he had, and so survived the harsh bleakness that masked over the rich Kansas soil. By 1910 "the boys", Orville and Wilbur, had earned enough money with their airplanes to spread the wealth generously among family members. This was most helpful to Reuchlin, though he could not help but contrast their success to his own style:

> "The boys have been very generous to Lorin and myself. I myself have never been a great money maker but I have managed so far to keep most that has come to me. I am a money saver rather than a money maker. I presume I have now something like fourteen thousand dollars; enough to insure me against want in my old age. ..." (5/2/11) [23]

When Wilbur died a year later, the $50,000 he left to Reuchlin enabled him and Lou to move to Baldwin, Kansas where they bought a larger house with such modern conveniences as gas light. Yet a lingering kind of unworthiness about this "unearned" success bothered Reuchlin and he returned $1000 of his inheritance to his father, writing,

> "This is not intended exactly as a gift. It is some of Wilbur's money and I am inclined to think perhaps if he had more time for deliberation he might have made some provisions differently in his will. Anyhow this is yours to use or give away or do whatever you desire with it that may give you the most pleasure." (10/6/12) [24]

Milton returned Reuchlin's check, explaining that Wilbur's last wishes were being strictly followed, that in fact his will was regarded by the family as if "sacred writ."

For all his self-doubting distance from the emotional heart of the Wright home, Reuchlin was every inch a product of that home. He was frank in his

opinions, brief and abstemious in expression, sober, more resolute than industrious, and long-suffering in adversity. Honest even in pain, he sympathized with Milton in the weeks following the awful event of Wilbur's death:

> "I have no doubt you miss Wilbur greatly. He was in and out of the house there and the absence of his presence is more noticeable than to me. He was a good and great man, kind-hearted and generous, loving his own people. We all shall miss him but you and Orv and Kate will miss him most of all." (7/22/12) [25]

Reuchlin died eight years later, on May 23, 1920, age 59.

The second child born to Susan and Milton was Lorin, named after a place on a map picked more or less because it sounded nice. It is said that Milton regarded "Wright" as a rather common name, and so he tried to bequeath some uniqueness to his sons by giving them unusual first names. [26]

Lorin was born some twenty months after Reuchlin, on Nov. 18, 1862, in Fayette County, Indiana. He was to live close to the family for most of his life, and one is really hard-pressed to make a case for his "exclusion" from membership in the family "core". He, his wife Netta, and their five children (2 sons, 3 daughters) were at times even the very center of joy and life for the Dayton Wrights, and Lorin's home was just a few blocks from 7 Hawthorn St., the home of Milton, Susan, and the three younger children. Lorin thus becomes "secondary" to the Wright story not because of his importance or centrality to the Wright hearth, but because he had little impact on the particular set of dynamics which led so powerfully and directly to the birth of the airplane. He gave valuable support and assistance in his quiet, incidental way, but he did not energize the birthing in that lean, "driven", determined way which characterized his brothers' pursuit of flight. He emerges from the record as a very kind and easy-going man, the son one might most have expected to provide the delights of aunthood, unclehood, and grandparentship to the residents of 7 Hawthorn.

Lorin studied Mechanics, Political Economics, and religion at Hartsville, his first time away from home and family. Money seems to have been a constant problem for him and Reuchlin at the college, and he often wrote home to his thrifty parents asking for more. In an age before the typewriter, Lorin's penmanship was practiced, even artistic, and in his spare time he taught his skill to a few students to earn extra spending money. But this was soon abandoned as he had too few students to make it worth the effort. Always demanding a strict accounting of his sons' resources, Milton was perhaps a bit tight with the budget. In October, 1882, Lorin pleaded with his mother,

> "We will owe some more before you can send some down so please send enough down so we won't always be out of money." (10/31/1882) [27]

By 1884 Lorin was back in Dayton and having no more luck at finding a job than Reuchlin. He managed to get a low-paying clerical job with a Dayton carpeting, drapery, and wallpaper business. He grew dissatisfied, quit, then took the job back but continued to be restive. In May, 1885 he was earning only $7 per week and his weight was down to 125 pounds. He left the business for good and within six months had headed West, like his older brother, to seek a decent wage.

In May, 1886 he was working as a "weigher" for the Dessicating Company at the stockyards in Kansas City, Missouri, but this did not last and he returned to Dayton. Once again, in April of 1887 he headed West to Kansas and got a job in an "abstract office" (real estate papers) in Coldwater. By November he had picked up work as a clerk in a law firm, and was feeling the oppressive boredom of the Plains winter bearing down on the small town. He wrote to 14 year-old Katharine, his favorite correspondent,

> "The great sport here now is wolf-chasing. They have several stag and grey hounds here that are pretty good on the chase. Since the cold weather set in they come up right into town. I saw one from the window of the court house a few days ago not more than a hundred yards away. They have killed quite a number. ...Ask Willie what he will take to make a box for my guitar. I wish he would make me one and send it and my guitar out." (11/29/1887) [28]

Returning to Coldwater in January, 1888 from a brief trip, Lorin was surprised to see that there had been four weddings in his absence. He confided half-teasingly to Katharine that he would be "about the only old batchelor (sic) left before long if I do not look out." [29] To make matters worse, a young man with whom Lorin had planned to start a loan company went to St. Louis and, to Lorin's complete surprise, got married and remained there. Lorin was then just barely meeting livinf expenses. With the usual Wright wry frankness, he wrote his father,

> "So I am no richer than I was when I came here and not so rich as I was when I left home." (2/19/1888) [30]

Several days after this letter, the law firm which employed Lorin burned to the ground in a fire which - with no insurance to salve the wounds - ruined most of the businesses in Coldwater. Lorin and a friend, Patrick, joined forces with a hardware merchant, George Jeffrey, who had lost his store to the fire, and formed a loan company. In the meantime Lorin had been appointed Deputy County Treasurer of Commanche County, about 6,000 population and 700,000 acres of land. Business started to take off a bit for Lorin, but only in fits and bursts. He missed his family in Dayton and longed for the rich green of the Ohio Valley. In Spring of 1888 he wrote to his sister,

> "We were over on Mule Creek where there are quite a number of small stunted trees. They look fine to a person who has not seen a tree for a year nearly. ...I hear that Ella Steward has got married. That is too bad is it not. And poor Lornie is an old batch yet." (5/30/1888) [31]

The new year of 1889 ushered in more winter boredom, and business had not picked up much. Lorin had been forced to forego visits home because he could not afford the fare, nor could he afford new clothes. He had worn the same clothes, save one pair of pants, since leaving home nearly two years prior, and in this he was not at all out of step with his friends struggling to implant prosperity in the "bleeding Kansas" of range wars and wild wolves.

In March, 1889 George Jeffrey sold his interest in the loan company to Lorin and Patrick. Crops had been bad the previous season and everyone had suffered thereby. In April, Patrick's parents grew ill and sent for him. He remained at home through June, when his father died. Lorin complained to his mother of loneliness, and his outlook seems to have grown more and more depressed. In July he received a letter from Milton telling him of his mother's death. Lorin replied,

> "Yours informing me of Mother's death...took me altogether by surprise for although I knew that she was very weak I did not have an idea that she was dangerously ill until I received your letter. Had I known she was so bad I would have come home....
>
> No one ever had a better Mother. But she is better off now and her sufferings are over. I should have liked so much to have seen her before she was gone.
>
> There is no news in particular to write you. Let me hear from you often and tell poor little Katie to write.
>
> Affectionately,
>
> Lorin." (7/12/1889) [32]

Within a few months Lorin had abandoned the bleakness of his Kansas ventures and returned to Dayton, perhaps with a greater appreciation of what he had missed so dearly, the warmth and support of the family. He helped out with Orville's printing work and with his father's U.B.C. publications. In 1891 he nurtured a fondness for a life-long neighbor, Netta, and soon their relationship was such that he made plans to build a house of his own. Netta and Lorin were married, and he took up work as a bookkeeper with the John Rouzer Company, a building contractor and cabinet maker. He remained there for the next thirteen years.

With each child that Lorin and Netta brought forth - Milton, Ivonette, Horace, Leontine, and Rachel - a new source of love and amusement was granted to the whole Wright clan. That was certainly Lorin's most lasting and significant legacy, and

it was no small one. Ivonette has lived to be a spokesperson for the family and its early years [33] and the husbands of two of Lorin's daughters - Messrs. Steeper and Miller - served admirably as executors of the Wright estate following Orville's death. It is in large part due to their sense of history that the Wright papers were left with the Library of Congress, rather than with the family or with an institution of smaller public access.

In the years immediately preceeding the financial success of Orville and Wilbur in 1908, Lorin brought in a marginal income, especially given the obligations of a large family, and when little Milton became seriously ill with typhoid in 1908, heavy medical bills almost broke him. In these years he was something of a "jack-of-all-trades", as he strove to supplement his bookkeeper's salary. During the summer months, for example, he ran a small lawn sprinkling service from a horse-drawn wagon. His marriage to Netta was a happy one, and he enjoyed happy relations with his children and with the rest of the Wrights. Orville, Katharine, and Wilbur felt very warmly towards him, as did Milton, but one gets the impression that they also regarded him as lacking somewhat in shrewdness, perhaps a naive judge of character. He was a self-sacrificing and hard-working man, but as Wilbur had noted to Lou with his usual unsparing honesty, none of the Wright men was particularly "go-getting" and ambitious in the usual sense of the word. Lorin was always "poor Lorin" who had so many responsibilities and who often worked himself into ill health. The success of his younger brothers afforded him and his family financial relief, and he lived out a comfortable but quiet life in Dayton as a small business man until his death on Dec. 1, 1939. Netta passed away just over a year later, on Dec. 19, 1940.

THE WRIGHT CORE

There is some risk in making causal connections between parental attributes and those of their offspring, and one is naturally reluctant to make schematic

mountains out of factual molehills. It is worth remembering, then, that we really have little idea of what Reuchlin, Lorin, and their mother Susan were like as individual characters. One can draw some educated inferences and make some qualified guesses, as we have done, but in the final analysis we must conclude that the net when hauled in yielded a small catch by the standards of contemporary investigation.

Much more data is available for the remaining members of the family - Milton, Wilbur, Orville, and Katharine. Our purpose here is not to string together a series of "psychobiographies", but to erect a scaffolding from which we might more advantageously view the Wright story. We shall look at the powerful loyalty which held the Wright core together, and at the central role of Katharine in maintaining the domestic values which nurtured the men. In a later chapter we will examine the moral righteousness which stands as perhaps the most salient and pervasive of their qualities.

## Loyalty and Unity

Mother's death on July 4, 1889 after four years of steady consumptive decline prompted some dramatic realignments of the family structure. Wilbur was freed, perhaps a bit reluctantly, from his valued role as caretaker and "stand-in" for Milton, and was able to turn his attention to the process of defining his own goals in life. Unable to do so with much clarity, he merged his energies with Orville's, which were enthusiastically thrown into the printing business. They published a small newspaper which Wilbur edited, and three years later, in 1892, they capitalized on the "safety bicycle" craze which swept over America (two wheels, both the same size, with pneumatic tires) to set up a sales and repair shop. Though always close to each other, "the boys", as they were known even into their middle years, may have been driven closer during the mourning

and adjustment period following Susan's death.

But the most long-lasting and formative effect of Mother's death seems to have fallen on daughter Katharine, then 15 years of age. Father's needs and wishes after his wife's death largely determined the course of Katharine's late teen and early adult years, if not her whole life, and it was her own sense of duty combined with a fierce pride and devotion to her bachelor brothers that kept her so faithfully serving the family for so many years. She was "groomed" for this role long before Susan passed away, as Father seems to have sensed that his wife might not always be able to function as the emotional center of the home. A month after her death he wrote to Katharine, who had just left for a college preparatory program at Oberlin, Ohio:

> "Dear Daughter,
>
> I hope this will find you well and enjoying life finely. We very much miss you, but we are satisfied if you are well and enjoying life and being real good as we suppose you are. Home however seems lonesome without you. But for you we should feel like we had no home. Yet we are so busy, we do not stop much to think whether we have any home or not.
>
> I often think of something or see or hear of something that Mother would know and care something about, but she is not here, and there is no one knows or cares anything about it.
>
> ...Come home when you get your visit out if we do not send for you before." (8/9/1889) [34]

One can imagine how this letter aroused homesick, maybe even guilty, feelings in Katharine as she pictured her grieving father alone with his memories and his sorrow. Yet the special relationship which one senses is about to blossom between Katharine and her father, a relationship which involved the transfer of father's needs from his wife to his daughter, had begun a few years earlier, in Katharine's adolescence. On October 15, 1887, when Susan had entered upon the final two years of her consumption, Milton wrote to his daughter from somewhere on the preaching circuit:

> "Be good. Learn all you can about housework. Do not worry Mother. Be my

nice pet daughter. I have not heard a line from Lorin, nor the younger boys." [35]

Milton was concerned about "shaping" his daughter's behavior, but ir wasn't until several months had passed that his motives became explicit. In fact, the modern reader is a bit taken aback at the unselfconsciousness with which this late-Victorian minister expressed his intent:

> "You must take care of Mother while I am gone. Take especially good care of yourself. You have a good mind and good heart, and being my only daughter living (an infant girl had died years earlier), you are most of my hope of love and care, if I live to be old. I am especially anxious that you cultivate modest feminine manners and control your temper, for temper is a hard master." (5/30/1888) [36]

In partial explanation of father's expectations for Katharine, one can note that a common literary theme at the time was devotion of daughter to her widowed father, usually to the point of foregoing marriage and other private aspects of her own life. This was, of course, the era which produced Freud, but it was also the era which raised domestic and family virtues to their historical apex - which gave us Christmas cards, Santa Claus, and brief prayers of domesticity such as "Home Sweet Home", "Home is Where the Heart Is", and the like. The time was oddly sensitive to the needs of family, while woefully naive about the needs of women. It is almost as though there were a Victorian blindness to the possibility that a woman should want or need anything other than to care for others, to give and to nurture. Certainly the notion that a woman might have sexual desires was utterly incompatible with the tamed, ultra-domestic sanctuary of the late 19th century home. Repression of needs by women - on a scale so massive that it virtually launched the psychoanalytic movement into popularity as a treatment for unhappiness - was the kingpin of domesticity, and it was the key to holding the Wright family core together.

Katharine stepped gradually into her mother's shoes as the central supportive figure in the house, next to Milton himself, and by the time she finished college

her mission in life was clear to her. Milton wrote as she was about to graduate from Oberlin:

> "...A week from tomorrow and yoy graduate! A long seige nearly ended. A home womanless for five years - (but one less boss for me). Perhaps I may get a letter from you this morning." (6/14/1898) [37]

In 1905 he sent a postcard to Katharine mistakenly addressed to Miss Catharine Wright (Catherine was Susan's middle name and his own mother's first name).

In order to keep his temperamental daughter in a dutiful frame of mind, and to guard against any such rebellion as he had had with Reuchlin (and which Reuchlin was to have with his own daughter Helen), Milton appealed to her caring and nurturant instincts, and for these he rewarded her handsomely with affection and gratitude. He seems always to have worried that there would be no home to come back to after his travels if his only daughter were not there to preserve it and maintain the maternal/executive presence in his absence. In a very direct way he exhorted her to fulfill the obligations he felt were her birthright, and he was particularly concerned that the all-important contact among family members via the mails be maintained. Milton could never get enough letters (one suspects Susan had spoiled him in this regard!) and could never cease from demanding more. He wrote Katharine in 1892 about some financial matters that needed her attention, and said,

> "Do not neglect nor be careless about it. ...I want you and the boys to be real good while I am away. Make business first; pleasure afterward, and that guarded. ...I want you to raise a racket if I do not get letters from home every week. I have not heard from home since I left nearly two weeks ago! There is no use in such work." (9/12/92) [38]

He also wrote in a similar vein to Wilbur two years later:

> "After this one of you boys must reach me by letter each week promptly." (9/15/94) [39]

His bark was apparently worse than his bite, as Orville and Wilbur wrote more or less as they wished rather than on demand.

But for Katharine, guilt and obligation were potent forces, and Milton did not hesitate to use them when love and affection proved insufficient motivation. When she was 14 and Orville 17, he wrote them to be "real good and agreeable to one another, so Mother will enjoy the times and live longer." (8/11/1888) [40]

Milton Wright placed a high premium on family unity and loyalty that is difficult for the modern reader to understand in any light other than that refracted through some concept of family neurosis or overinvolvement. (By way of contrast, the aviation historian Charles Gibbs-Smith notes that Bishop Wright "exerted a strong and pervasive influence over the household; he had a totally benificent influence in every way, the sort almost totally unknown to the present day (1974) young people of both the United States and the United Kingdom." [41] The Wright family was very much imbedded in late-Victorian bedrocks of devotion, self-denial, sacrifice, and above all, faith in the enriching quality of a solid family structure. Though these ideals are not entirely passé now, it is nevertheless true that multiple forces of largely unarticulated dimensions have split the generations within contemporary families to a far greater extent than would have been conceivable at the turn of the century. And the explosive eroticism of the past couple of decades places strains on present-day family intimacy that were largely unknown, or at least well-repressed, in earlier times. In fact, the problem with many of today's families is precisely too great a lack of repression and too "democratic" a manner of structuring roles within the home. [42]

Adding to these differences today is the more subtle sense of psychological self-consciousness that tends to keep parents in a state of self-doubt and hesitation concerning their power and influence over children. Today's parents usually feel guilty over any feeling that their own needs are being worked into the lives of their children, as though a violation of the child's integrity or autonomy would ensue.

Milton Wright's power over his household and his children (and his church as well) was uncompromised by these sophisticated - maybe oversophisticated - questions. With the most benign of intentions he often managed to place his own needs for a happy domestic life above whatever perceptions he might have had of his children's needs to establish intimate relations outside the home. Predictably, this became more acute after Susan's death in 1889. We should remind ourselves that there was no malevolence wrought on his children by Milton. He simply adhered without question to the authoritarian and conventional - the paternalistic - notion that "Father knows best." When Wilbur scalded his arm and chest in an accident with his aeroplane engine in France (1908), Milton wrote a summary of his sympathy from the comfort of the Dayton home:

> "You are surrounded by those who have sympathy with you in various degrees, and from various causes, of almost every shade. And you have lack of sympathy, and even inward hostility, from even as many diversified causes. The ties of blood relationship, if cherished, are more enduring and more real. I wish you could have occasional visits to the old home." (8/27/08) 43

Had Wilbur listened closely, he might have heard the earnest tones of the reformed Dan Wright to young Milton by the fire in their Rush County homestead, as the wild Kentuckians distilled their whiskey in the untamed woods down the hollow, and hordes of unattached frontiersmen stormed past on their way to gold and mammon.

Milton's needs and domestic values, if expressed as a kind of sentimental longing to his sons, were expressed in more demanding form to the now-central maternal-executive Katharine. He fairly badgered her for mail, and he could be sarcastically derisive when she failed to measure up. In the Fall of 1908, when Wilbur was in France demonstrating the Wright Flyer, and Orville was in a military hospital near Washington, D.C. after an accident at Ft. Meyer, Virginia during flight trials for the Army, Katharine went to stay with Orville in his room, promising her father that she would write him every day. She was unable to do so as she was so exhausted from nursing her brother, so Milton wrote to her:

> "We had a letter from you Wednesday afternoon, dated Monday night, promising one each day. It is now Saturday afternoon and no later letter has come to any of us. The natural inference is that you are down with typhoid fever. ...We are so ashamed to tell the many inquirers after Orville's condition that for four days (tomorrow) we have no word from you, so we have to say that we suppose you are sick. But if you are down sick, news might disturb you. So I will close." (9/26/08) [44]

Three days later Milton softened, and expressed to Katharine his sympathy for the general stress endured by his children during those weeks, but a letter to the hospitalized Orville (which Katharine was sure to read) suggested Milton's continuing displeasure and hurt over his daughter's not writing up to her promise:

> "We have no letter from Katharine since hers to me, dated. dated Sep. 21st. ...Why she cancelled her purpose to write daily, we cannot determine, only on the theory that she is sick. ...Two of the children stay with me each nite." (9/28/08) [45]

Beneath the demandingness we see also the anxiety that Milton might lose his daughter to illness, though it is really not clear that he was genuinely concerned about this as a danger to Katharine. It is more likely that "illness" here becomes a kind of metaphor of abandonment, in which he expresses both his neediness and his anger.

Milton needed some family contact at all times and rejected a suggestion by Katharine that he get a housekeeper in her absence. Milton stated flatly, "I do not want a housekeeper while you are gone,"[46] and the next day, "Mrs. Davis came today...I do not want her to housekeep while you are away."[47] At the time Milton was 80 years of age, Katharine 34.

Time away from family was painful and lonely for Milton, and he assumed that closeness to family was the natural order of things from which only the recalcitrant or foolish would wish to deviate. He literally counted the days any member of the family was absent. Writing to Wilbur, then in France, in 1908, he noted that "Katharine came home (from an Oberlin College reunion) after eight days absence from home", and then he described his own absences from home over the years in sympathy with what he presumed, with only partial accuracy, to be the

same state of mind in Wilbur:

> "I have had some experience in being thousands of miles away from home, away from my family. But I was in my own country and amid my own language. In 1857-1859, I was a full month distant, and mails were about six weeks en route. In 1885, 1886, 1887, and 1888, I was about 7 or 10 days away. I do not like to have you so far from us all, with your cares and experiments. So far you have been well starred." (6/28/08) [48]

Again he wrote to the rather self-sufficient and ascetic Wilbur, whose self-control seems to have left little room in his life for loneliness or self-pity,

> "I wish it were so you could be in the home circle. Milton (Lorin's son) says his uncles will be in business, and he cannot have fun with them as in the past. You are so <u>alone</u>, if not lonely." (9/9/08) [49]

> "I feel as if you, with the attention of thousands of admirers, were lonesome for want of old friends and inmates of the home." (9/14/08) [50]

Milton was proud of being able to keep three of his brood with him into old age, and he announced to Carl Dientsbach, an American correspondent for a German aviation magazine,

> "My sons Wilbur and Orville are expected under the parental roof - always their home - within a few days." (12/22/03) [51]

This was five days after their historic first flight on the winter sands of Kitty Hawk, North Carolina.

Thus, when flying demonstrations and European business transactions took Orville and Wilbur from home for extended peiods of time during the years 1907-1909, Milton admitted that he was "perhaps a little childish in my feelings about having you so far among strangers." Refraining from the demandingness he showed toward Katharine, he wrote wistfully and touchingly over the many long months such comments as,

> "As long looked for, you (Orville and Wilbur) are both far away, probably never to be much at home after this. But I follow Mother's advice to say little about it." (8/4/07) [52]

> "Well, we miss you. But while your business goes forward, I have to accept the inevitable." (7/13/08) [53]

> "We look forward to the time when yoy can be again in the home you have always so loved." (9/24/08) [54]

> "We are all anxious to see you but I have realized for sometime that your long abode under the old roof had probably terminated. It is just as well to take the matter philosophically." 55

Milton's intense emotional involvement in the lives of his children - heightened by the urgency of his own need for intimacy after Susan's death - became a key element in uniting them to one another and binding them to the home. He needed the close affiliation which his own experience had shown could only be had from the trusted inner circle of blood relations.

But it was not this sort of paternal dependency and control alone that cemented the Wright core. Bishop Wright showed a daily solicitousness for his children's welfare and health which can only be seen as reflective of a sincere and strong love. For him, love was very much a Christian caring and compassion for others which flowed most freely and paradoxically in an atmosphere of worldly trial and trouble, and which offered solace in times of adversity. It was the Wright pioneer heritage of at least two generations that love in the home should grow as strength against a hostile and antagonistic world. The year 1889 had been such a time for the family, as we have seen. And 1908 was another such year. Bishop Wright was 79 years old, and as events unfolded he proved to be the mainstay and central support of his often far-flung brood.

It was a year of separations, always difficult for Milton, with Orville in Washington, D.C. during September for Army trials of the Wright Flyer, and Wilbur in France from June to October for the same purpose, before a syndicate of French industrialists and investors. Their fortunes and reputations depended on successful outcomes, and they had prepared somewhat hastily and on short notice during April and May at their old Kitty Hawk experiment grounds. Neither had flown since 1905, having spent the intervening years trying to negotiate sales of the invention both in the U.S. and abroad without disclosing information about the Flyer to the several competitors who were still trying to get off the ground. That Spring was their first return to Kitty Hawk since their quiet triumph of December, 1903.

Wilbur preceeded Orville in order to set up camp once again.

He left Dayton on April 6, spent a few days in Elizabeth City, N.C., purchasing supplies and arranging for their transport to the Outer Banks, and arrived at Kitty Hawk on the evening of April 9th. He found what must have been a very disheartening scene, however much it was to be expected. The 1903 campsite was a wreck. The roof and one wall of their old building were gone. A second building was completely destroyed. Their water pump was rusted beyond repair. The floors were two feet under sand. Everywhere he walked, Wilbur stumbled upon some shredded relic of the painstakingly crafted gliders of 1901, 1902, and 1903. Vandals had ripped the cloth wing surfaces off and had torn up their cots. Their was now trouble with delivery of lumber for new sheds, and Wilbur was further plagued by high winds and rain. On April 18 he wrote in his diary that progress was being made on the shed, but "I have been bothered with diarrhea for several days, due to the food we have, no doubt. Conditions are almost intolerable."[56] On April 20, a barrel of precious gasoline was found half-drained from a leak sprung during clumsy unloading by Captain Midgett and his son, ferrying the supplies over from Elizabeth City.

On April 21, Bishop Wright noted Orville's departure to Kitty Hawk to join Wilbur: "At 6:15 Orville started for Kitty Hawk, N.C. A perilous undertaking."[57] Orville left Dayton not fully recovered from a mild flu, which his father considered at least as dangerous as any flights he might make. He arrived on April 25 and met Wilbur and Charles Furnas, a mechanic from Dayton who had worked with the Wrights before and who had surprised Wilbur by showing up ahead of schedule on the 15th. Wilbur's spirits picked up upon Orville's arrival and he joked about their sleeping arrangements that night in the newly built sheds:

> "I slept in a good bed of regular camp pattern. Orville slept on some boards thrown across the ceiling joint. Furnas slept on the floor. Each pronounced his own method a success."[58]

From that point on things proceeded smoothly enough, and on May 14 Charles Furnas became the first airplane passenger in history, with Orville at the controls. Later that day Wilbur crashed the plane and brought to a close their several days of flight training and "familiarity runs" with the newly designed controls, in preparation for the upcoming demonstrations. These would be the grand entrance of the first practical Wright machine onto the world stage, after a three-year hiatus for negotiations for its sale. They dragged the damaged 450-pound machine a mile and a quarter across the sand back to camp, where Wilbur recorded the effort:

> "The heat had become almost unbearable and we barely escaped collapse before reaching the camp. After dark we went over and got the rudders and radiators. We went to bed completely fagged out."59

They left camp on the 17th of May. Wilbur was operating under tight deadlines for the French trials, so he regretfully passed up a return to Dayton and went straight to New York, where he sailed for France five days later on the liner "Touraine". Orville stopped briefly at Washington on his way home to survey the grounds at Ft. Meyer, across the Potomac River in Arlington, Virginia, which had been designated by the War Department as his demonstration field.

There were three major reasons for haste at this time. First was the deadline for demonstrations in the U.S. Time had been set in advance by the Army, and after several years of embarrassing foot-dragging by the War Department subsequent to its ill-fated underwriting of Professor Samuel Langley's "Great Aerodrome", the Army was not going to brook excessive delay. Second was a need by the Wrights to sell some planes quickly to ward off what Wilbur had described in late May as "an approaching financial stringency which has worried me very much for several weeks." 60 Third, and perhaps most important, was the need to close a deal either at home or abroad while they still remained in a position of demonstrable superiority over other inventors. While no one was particularly close to achieving their degree of proficiency and skill, either in theoretical knowledge or in practical flight,

a number of Frenchmen were making what appeared to potential investors to be some very impressive "powered hops" of several hundred yards, provided there was no wind, in planes that copied in gross form the Wright design. And Glenn Curtiss of the Aerial Experiment Association in Hammondsport, New York, a group which included Alexander Graham Bell, was close to making truly successful powered flights comparable to those of the Wrights. He had copied their principles and later lost a lengthy patent suit, but at this point that did not matter. The psychology of appearing to be far ahead of the competition in the market was more crucial to financial success than the legal demands of inventive priority. If others were perceived as being on the verge of success, investors would be less willing to come to generous terms with the Wrights.

On June 7, Orville wrote to Wilbur in France that the AEA was advertising to sell one of its planes for $5000. He complained, "They have got some nerve."[61] Also, a French flyer named Henri Farman was expected in New York during August, where he was to make some publicized "hops" at an exhibition and impress upon the public that the age of flight was both around the corner and French. It was apparent to Orville that their position of demonstrable superiority would have to be translated quickly into profit if it was to be done at all. As he reminded Wilbur on July 29,

> "Farman was expected to arrive at New York today. If you don't hurry he will do his flying here before you get started in France." [62]

The pressures on Wilbur in France were mounting, and they really were quite severe. For openers, when the crate in which Orville had shipped a Flyer to France was pried apart, Wilbur discovered not an airplane but a wreckage of twisted wires and ripped canvas. He initially blamed this on Orville, whom he thought had done a sloppy job of packing, but later French customs officials were found to be the culprits. Constructing the Flyer from the pieces in the crate was a difficult enough

task, and was compounded by workmen who spoke only French and whose mechanical abilities suffered, in Wilbur's opinion, from a certain romantic - French? - disregard for technical detail. He had been offered the use of a factory and workers by Leon Bollée, an automobile manufacturer, at no expense, but he sometimes paid a price in other ways. He wrote to Orville on June 20,

> "In putting the machine together I have to do practically all the work myself as it is almost impossible to explain what I want in words to men who only one fourth understand English. I doubt whether I can get ready to fly within three weeks.
>
> ...I have had an awful job sewing the sections together. We have had regular French weather for the past four days, and the cloth is shrunk about a foot, and as you failed to put blocks to hold the end ribs of each section, and also put the little washer on the rear wire outside instead of inside the ribs, we had trouble enough. I was the only one strong enough in the fingers to pull the wires together tight, so I had all the sewing to do myself. It took a day and a half. My hands were about raw when I was not half done." 63

And on June 28,

> "I have been at work eight days now and have the machine about a fourth done. ...I have a man but...his vocabulary is limited. When I say to him, "Hand me the screw driver," he is liable to stand and gawk or more often rush off as though he really understaood me, and it is only after I have waited a long time and finally get it myself that I realize that he does not understand the special meaning of the word "hand" as I used it." 64

Wilbur took out some of his frustrations on Orville, but sarcasm generally sufficed to drain off most of his irritation. The French were nor spared, as we see in a letter to Katharine about the streetcars in Le Mans:

> "As I have had more leisure than heretofore I have had time to ride on the street cars instead of walking. The whole system reminds one strongly of the game of wood tag which we used to play. The cars all seem to think themselves safe only when standing on switch. You remember how "Billy" Wagner used to walk up to a corner and take a look before making the turn? That is the way the cars do here. They look to see if the switch is full. If there is room for one more they make a rush for the place. About once in so often they make a stop to take a cash register on board. The cash register walks up and down the aisle inspecting tickets to see whether the conductors are knocking down fares. From the amount of the fare (two cents) and the seedy looks of the conductors I think that making a living stealing fares would be sufficiently hard without being bothered by cash registers like this. The animated cash register is very amusing, but it is quite charac-

> teristic of the French to find ingenious ways of making human labor take the place of machines."[65]

Wilbur was not the only Wright to suffer during the summer of 1908. In June, back in Dayton, Lorin was run over by an automobile driven by a drunken saloonkeeper while riding his bicycle. He was thrown from the bike "and pushed along by the car which passed over him, but not with the wheels. He suffered multiple scratches and wounds to his arms, legs, and head, and developed a two-day fever (probably shock) but not broken bones," wrote Milton to Wilbur.[66] He missed about a week of work, and by September, Milton was able to write that Lorin's scars had disappeared.

On July 4, 1908, a hose connected to the cooling system of Wilbur's engine at Le Mans ruptured while he was inspecting it and showered him with scalding water. Ever conscious of his father's concern with safety and not wishing to alarm the family, Wilbur downplayed the accident:

> "I have had a little trouble...recently. A rubber tube came off the upper water connection of the engine when it was running with water boiling, at 1500 rev. per minute. I was standing just in front of it, taking the speed, and the steam under pressure of the pump struck me in the side and upon the arm at my elbow."[67]

It was an injury which required more than a month to cease paining him, yet Wilbur treated it with humor in his letters home, as in this one to Katharine:

> "My burns were not very serious and I will be at work again today. In order to avoid any chance of my arm getting sore I had a "docteur", ...probably a "hoss doctor", came to dress my arm Sunday. He sent for a bale of cotton and a keg of oil, and after soaking the former in the latter made a vain attempt to plaster it on to my arm and side before more than half the oil had dripped out. When he was done he had two wash bowls, six towels, and a dozen or two newspapers soaked with oil, not to speak of the table cover, the rug, and my clothes. The oil ran down my arm and began dropping off my finger tips and down my legs till my shoes were half full. As I had no tin handy to make eave troughs I got a dozen newspapers and spreading them on the bed, tried lying down. But the oil went through all the newspapers, the sheet, and into the mattress. I thereupon removed all the stuffing, like the fat man in A. Ward's show, and dressed the burns myself with more sense.
>
> I fired the "docteur" after his first visit. If you ever get burned do not waste your money on doctors, but get a barrel of oil and fill up your bathtub and crawl in and stay till you are well."[68]

A week after Wilbur's burn, which had occurred on the anniversary of his mother's death, father wrote that little Milton had come down with typhoid. Lorin was recovering from his outo accident at the time, and Katharine spent most of her days four blocks down the road at Lorin's taking care of her nephew. The family grew dissatisfied with the physician for they felt he had not made the diagnosis early enough, and they eventually risked the injury of insult by seeking the advice of two other doctors - at additional expense. Milton's condition was not improved until September 3, and the severity of his illness was enough to overshadow at times the world triumph Wilbur was working in France with his phenomenal flying demonstrations.

July was also a bad month out in Kansas. Reuchlin was having a hard time with his crops, and even distant relatives had their troubles. Father wrote Wilbur that Reuchlin was "having a blue time with the weather and his crops,"[69] and "Elizabeth Wright (Thomas's wife is in very precarious health, especially since her son in law, Dr. Dillon, ran his automobile into a locomotive and was killed."[70]

An additional major calamity struck in September. Orville had matched Wilbur's success with some spectacular flights in Arlington over the Ft. Meyer parade grounds, and the press was happily fostering a sort of trans-Atlantic fraternal competition as to who would remain in the air the longest, fly the highest, etc. The sporting and slightly less cautious Orville was breaking his own records, and Wilbur's, every day until on September 17, with a Lieutenant Thomas Selfridge on board as a passenger, the Flyer crashed to the ground from a height of 75 feet. The cause had been no indiscretion of Orville's, but a hairline crack in one the propellers which, allowing the propeller to flatten somewhat on one side, had set up a vibration. The vibration had in turn loosened the propeller sprocket, freeing the prop just enough to have it sever a crucial control wire. Twenty-six year-old Selfridge, a West Point graduate from San

Francisco who had been involved in the Aerial Experiment Association with Curtiss and Bell, suffered severe head injuries and died a few hours later, having fractured his skull against one of the wooden wing struts. Orville broke his leg and four ribs, wrenched his spine (this injury was not evident for many months, yet for the rest of his life Orville found the jostling motion of ordinary train or auto travel very uncomfortable), and was in the military hospital at Ft. Meyer for nearly six weeks. Katharine went to D.C. immediately to care for him, and did so with an earnestness that was noted by all who visited. She was by his bed around the clock in the initial days of the recovery, and very nearly all nights and evenings for the rest of the hospitalization. She was particularly concerned that the sparse staffing of the hospital at night would leave her brother unattended. Octave Chanute, a senior engineer and experimenter in aeronautics who had encouraged and corresponded with the Wrights since 1900, remarked in a letter to Wilbur that

> "Your sister has been devotion itself. Fearing that he might lack something she stayed up at the hospital every night and deprived herself so much of sleep that I ventured to remonstrate with her about it."[72]

Wilbur felt Orville's injury as if it were his own. Their mutual efforts to analyze the accident objectively barely masked feelings of regret and anxiety over the close brush with death. Wilbur confided to Katharine in a letter from Le Mans:

> "I cannot help thinking over and over again 'If I had been there it would not have happened.' The worry over leaving Orville alone to undertake those trials was one of the chief things in almost breaking me down a few weeks ago, and as soon as I heard reassuring news from America I was well again. A half dozen times I was on the point of telling Berg that I was going to America in spite of everything. It was not right to leave Orville to undertake such a task alone. ...If I had been there I could have held off the visitors while he worked or let him hold them off while I worked. But he had no one to perform this service. Here Berg helps to act as a buffer and gives me some chance to be alone when I work. ...When we take up the American demonstration again we will both be there. It is much easier to do things when you have someone at hand in whom you have absolute confidence."

He concludes with sympathy for his sister and father -

> "I am awfully sorry that you have had to pass through so much trouble of a nerve wracking character this summer. ... I presume that poor old Daddy is terribly worried over our troubles but he may be sure that...things will turn out all right at last. I shall be not only careful and more careful, but also most careful, and cautious as well. So you need have no fears for me. I promise you that I will be as careful of myself as I was in 1900 when I gave you a similar promise. It is a pity that Orville is not with me as he was then. I like to keep promises when I can do it conveniently."[72]

Responding directly to what he senses would be his father's reaction to Orville's close encounter with death, Wilbur offers a reassurance that sounds almost confessional in tone, as if indeed Orville's accident had been due to his separation from the older, perhaps more "sober" and responsible Wilbur:

> "...I know that you will be more cut up over the affair than even we are. Young people are shocked for a moment but soon recover themselves. You need not fear that such a thing will happen again. It is the only time that anything has broken on any of our machines while in flight, in 9 years' experience. I feel sure we can keep such a thing from happening again. I think the trouble was caused by the feverish conditions under which Orville worked. His time was consumed by people who wished to congratulate and encourage him when the thing he really needed was time to rest and time to work. He is too courteous to refuse to see people and he had no one to act as buffer as Berg does for me. I will never leave him alone in such a position again."[73]

As if reading his son's mind, Bishop Wright wrote - their letters crossed in the mail - "I think your caution would have avoided the accident."[74]

As Wilbur suggests, there was enormous strain inherent in being the object of mass scrutiny and attention. Concentration was made difficult, as was the discipline of living habits required to maintain an even balance and attitude for the flight demonstrations. Orville had been staying at the Cosmos Club in Washington, where he was subjected to the usual round of wining and dining and conversation. He had been feted into a state of exhaustion. He was receiving a large volume of mail, all of which he felt, in his midwestern sense of decency, he ought to answer (Wilbur counseled him to burn them instead), and he complained to Katharine three weeks before the Ft. Meyer accident:

> "I haven't done a lick of work since I have been here. I have to give my time to answering the ten thousand fool questions people ask about the machine. There are a number of people standing about the whole day long. ...I find it more pleasant here at the Club than I expected. The trouble here is that you can't find a minute to be alone. ...I have trouble in getting enough sleep."[75]

And ten days later,

> "I have been better than when I left Dayton. My only trouble is in getting more than five or six hours' sleep, on account of visitors and correspondence that must be attended to at nights."[76]

Wilbur led his characteristically ascetic life in France, living in a shed with his machine and refusing to drink wine, smoke tobacco, or socialize. He struck the French as a bit odd in this regard, and his apparent indifference to women prompted a journalistic hoax, reported in French papers and across the Atlantic in a Dayton paper as well, to the effect that Wilbur was being named in a divorce suit as having slept with the wife of a French military officer. As can be imagined, this hurt and angered Wilbur not only because it rubbed salt in the wounds of bad press relations between the Wrights and newspapers since the latter had botched the reporting of the Kitty Hawk acievement in 1903, but even more to the point because it offended his almost monastic sense of self-control and self-denial, and constituted a smear on the Wright name. He was concerned that his family would be upset, and he wrote a blistering letter of complaint to the Dayton paper which had printed the story. Moreover, the pressure of all this publicity and fuss was an endless, and in this case gratuitous, assault on his powerful need for privacy. He summed up the psychological strain to his father on September 13, four days before Orville's crash, when the latter had seen day after day of nationally and internationally publicized success:

> "Orville's fine flights are making more of a sensation than my first flight over here and I thought then people would go crazy they were so excited. Well it will be a relief to me to have some of the responsibility removed from my mind. While I was operating alone there was the constant fear that if I attempted too much and met with serious accident we would be almost

utterly discredited before I could get the machine repaired, with no materials and no workmen. The excitement and the worry, and above all the fatigue of an endless crowd of visitors from daylight till dark had brought me to such a point of nervous exhaustion that I did not feel myself really fit to get on the machine. But I am much better now and our position is so secure that I can work with less strain than when I felt that I was surrounded by a pack of jealous and chauvanistic Frenchmen who would be glad of the least excuse for stopping their cheers and beginning to hoot.

However I must say that here in the district of La Sarthe everyone from the prefect or governor down to the humblest citizen has seemed a genuine friend from the beginning almost. They look on me almost as an adopted citizen and show their friendliness in a dozen different ways. For instance, the old green cap which Orville brought home last fall and which I have been wearing over here when at work has set a new style and the stores have their show windows full of "Wright" caps. Some of the other manifestations are not so pleasant. From daylight till dark a crowd hangs about the building peering in at every crack. Almost every evening a crowd of two or three thousand people comes out to see if I will make a flight, and goes home disappointed if I do not. Some of them have come twenty, forty, or even sixty miles on bicycles and a few from foreign countries. One old man of 70 living about 30 miles away made the round trip on a bicycle every day for nearly a week. I sometimes get so angry at the continual annoyance of having the crowd about that I feel like quitting the whole thing and going home, but when I think of the sacrifices some of them have made in the hope of seeing a flight I cannot help feeling sorry for them when I do not go out. If I can get through this season in such a way as to make a reasonable competence secure I am done with exhibitions and demonstrations forever. I can't stand it to have people continually watching me."[77]

Such was the price of fame. There were in addition business concerns and patent violation problems (others' infringements of their patents) which worried the Wrights during 1908. On July 4th, the day Wilbur was scalded, Glenn Curtiss flew his "June Bug", having incorporated into ailerons the Wright principle of using wing torsion to control the airplane's lateral motion. Curtiss had been the engineering and inventive force behind the Aerial Experiment Association, which had entered into active competition with the Wrights, regarded them as overly secretive and money-oriented, and tried to learn covertly the secrets of their discovery while undermining their efforts to establish a monopoly in the business. Thomas Selfridge was suspected by Orville of funnelling information to the AEA, and Selfridge was also one of five judges on a panel set up by the Army to judge Orville's performances. Orville had written to Wilbur just prior

to his accident,

> "...I will be glad to have Selfridge out of the way. I don't trust him an inch. He is intensely interested in the subject, and plans to meet me often at dinners, etc. where he can try to pump me. He has a good education and a clear mind. I understand that he does a good deal of knocking behind my back. All the others I think are very friendly."[78]

The next day he repeated his feelings to Katharine:

> "Selfridge is doing what he can behind our backs to injure us."[79]

It is therefore one of those ironies that Selfridge named himself to be a passenger with Orville on September 17, displacing at the last minute a Lt. Benjamin Foulois who had been Orville's first choice because of his light weight and easy disposition. (Foulois later went on to become one of the first military aviators and rose to the rank of General.)

There is no reason to think that the accident with Selfridge was anything but that. There was no failure of a "pilot error" sort, and even a good pre-flight inspection might well have failed to notice a hairline crack in a prop. At any rate, in spite of the Wrights' suspicions about Selfridge's intentions, it is testimony to their fundamental sense of decency that they felt genuine regret at his misfortune in a machine of their construction. Said Wilbur to Katharine,

> "I received the news just as I was finishing preparations for an official trial for the Michelin and Commission de Aviation prizes.
>
> The death of poor Selfridge was a greater shock to me than Orville's injuries, severe as the latter were. I felt sure "Bubbo" would pull through all right, but the other was irremediable. ...I did not feel it would be decent to proceed as though I was indifferent to the fate which had befallen him as a result of his trust in our machines. So the trials were postponed till next week."[80]

Throughout all these months, 79 year-old Bishop Wright maintained a steady outpouring of sympathy, concern, and advice to all. He suffered from mild illnesses occasionally, but by and large he was in good health. He wrote Wilbur in August that "I have been unusually well."[81]

It was fortunate that he was well, for the family needed his support at this

time. It was a time of "reversal" for Milton, in which once again his children seemed to need him more than he them, and this might have had some salutary effect on his vigor despite the strains of events. For Bishop Wright, love always prospered best in adversity. After Wilbur's burn accident Milton wrote a most empathic letter to his favorite son.

> "You may rest assured that I have deeply felt for your situation in France. The loneliness of so far from home and friends, your difficulty in getting suitable workmen, your defective supply of parts..., your burned arm, your overwork and unaided cares, the annoying attentions of the multitude, the inconsiderate attention and requirements of notables, the immense responsibilities on your lone shoulders - all joined to make it hard on you. ...It took good metal to stand the strain. ...Most men...would have been like your broken propeller shaft at Kitty Hawk, in 1903. ...But you shall come through. ...Netta has often spoken of her pity for you, and Katharine has."[82]

Father lists carefully every one of Wilbur's troubles and communicates as is always his intent the feeling that the family is united in its support and compassion for one of its members.

To be sure, there is often found in the Wright correspondence a feeling of "we versus they". Father wrote in the above letter, "No doubt not a few would have welcomed a chance (by your mishap) to hoot, though they cheered your success along with the multitude. Men are savage." There had in fact been an attempt to saboutage Wilbur's flights at Le Mans by putting water in his gas tank, and this as much as his natural asceticism accounted for his sleeping in the shed with the airplane. But it remains that stress and competition, both fair and unfair, served to unify the Wrights, to feed their need for demonstrative mutual support, and indeed, to throw them back in on the family circle for the satisfaction of their most personal wants.

If we continue to look at the year 1908 as a year which drew the Wrights together, we see further examples of Milton's love and feeling for his children. While Orville was in his fourth day of hospitalization at Ft. Meyer, Milton wrote,

> "I am afflicted with the pain you feel, and sympathize with the disappointment which has postponed your final success in aeronautics. But we are all thankful that your life has been spared and are confident of your speedy, though tedious, recovery, and by adversity our hearts are made better." 83

It is perhaps natural that a minister would encourage his son in these terms, but in so doing Milton is not merely pious. Even poor Katharine, who bore the brunt of Milton's impatience and frustration in having his sons so far away, deserved and obtained a measure of his care and understanding:

> "I am sorry that Orville is having a sick, suffering time, and that you have so much care and loss of sleep. ...Netta forwarded Orville's night-shirt... but she probably did not see the necessity of dispatch, about which you know I am always concerned. ...There is not much for me but to pity Orville, Wilbur, and You. All have a hard time." 84

At times Milton seemed to project a sense of suffering or hardship when there was little apparent reason to suspect that such things were in fact a reality. Wilbur's famous flight up the Hudson River as part of the annual Hudson-Fulton celebration in New York harbor. On October 4, 1909, Wilbur attached a canoe to the bottom of his Flyer for flotation should the plane crash, and took off before a million New Yorkers from Governor's Island. Glenn Curtiss had attempted and failed a similar flight the previous day. Crowds thronged to the riverside as Wilbur rounded the Statue of Liberty, dipped his wings in salute to the thousands of spectators aboard several mammoth steamships below, and headed up the Hudson for a circling of Grant's tomb. It was a twenty-one mile round trip and as triumphal a day as could be imagined for both Wilbur and the Flyer, and following his performance in France the year before, its anticipation should have evoked perhaps a nervous excitement rather than ponderous worry. Yet in the few days before the Hudson River flight, Milton wrote to Wilbur another "we - they" letter in which he couched his empathy in a small sermon:

> "Religion is known to that man who is 'born again'. To others it is a strange thought. ...It separates the world into believers and unbelievers. ...I know how you are situated and how you are endangered and how you must feel." 85

Milton was most empathic when he perceived either suffering or isolation in his children, and no doubt it was his Christian evangelical world-view which shaped this tendency. They were most likely to receive some manifestation of his intimate feelings when their lives were under strain, and one cannot help but think that a certain selective attention prevailed in both Milton's and his family's perception of events. It is almost as if he focused naturally on those aspects of life which threaten rather than enhance one's sense of well-being, and thus he sensed acutely the dangers and hazards around his brood.

He seems to have had a particular concern for physical health and safety, not only his own but also that of the entire family. Granted that this was more germane an issue around the turn of the century than it is now, nonetheless there is a slight over-emphasis on illness and accidents in his letters. Of greater concern, of course, was his expectable concern with immorality or "moral illness", but this a subject for a later chapter. Yet in a sense Bishop Wright never really separated the two kinds of illness, and he felt strongly, as did his children - Wilbur especially - that an intemperate and irregular (i.e., immoral) lifestyle brought about both physical and spiritual sickness. Milton knew from personal experience in the United Brethren Church that stress and isolation could affect bodily weight, appetite, and susceptibility to disease. As we look at Bishop Wright's "family ministry", then, we should recall that the twin threads of empathy and worry binding the family are difficult to unravel, and in the end are really aspects of the same thing, an exceptional family love and unity.

Bishop Wright shared the prevailing attitudes of his time (and, curiously enough, increasingly of our own) that lifestyle and personal habits have a great deal to do with one's physical health. He might have been more at home, actually, with the later concept of disease as the result of invasive, hostile agents such as bacteria and viruses. But his was the age prior to such discoveries and before

the innoculations which made it possible for us to return to concern with life-style illnesses. The connection between personal habits and illness was not, however, as clear to that generation as it is to ours, and thus it was easy to draw inferences that physiological reactions were due to any number of social, psychological, or even moral factors. Such thinking, in fact, prevails in some people today who do not understand the etiology of disease and among many more people who happen to be faced with illnesses whose cause is as yet unknown, as in cancer. Thus shocking events could cause women to faint because the nervous and respiratory systems of women were seen as more delicate and more sensitive to social stress than were those of men. Traumatic injuries were thought to "weaken the nerves" in a very literal sense, and "nervous shock" was seen as precisely that and not the kind of analogue that it is today. Deaths of loved ones, accidents, "home sickness", irregular sleep habits, excessive worry - all were thought to affect directly the organ systems in which any disease process developed. Bishop Wright's younger brother William had suffered "dyspepsia" or upset stomach, and this was regarded as the cause of his diminished speaking ability and even the reason for his dull wit in conversation as the illness progressed. What he actually had is anybody's guess.

There was at the time very little understanding of the "unconscious" or of what we know as "stress syndrome", in which thoughts and feelings mediate the association of external events and symptoms. In 1900 Freud's epochal book "The Interpretation of Dreams" was published, but it would be many years before his appreciation of the power of mediating psychological processes would disseminate abroad and into the popular culture. Freud himself had been mistaken initially in thinking that actual events in childhood, as opposed to the mediating and internal processes of fantasy and wish-fulfillment, had caused his patients' symptoms.

Thus there was such a disease as "neurasthenia" or "weakened nerves", involving lethargy, a feeling of weakness, and an inability to engage in vigorous activity. People in unpleasant jobs or under stress of other sorts could develop this illness unaware of their underlying wishes to be taken care of, and they could do so without any guilty self-consciousness or sense of malingering, for not only did they believe they were truly sick, their employers did too.

In 1902 at Kitty Hawk, Orville kept his daily diary in a little notebook supplied by the manufacturer of a nostrum called "Simmons Liver Regulator". (This belief in the importance of the liver for strength underlay the sentiment which led to the epithet "lilly-livered".) After warning the sufferer against "cheap imitations", the advertising pronounced that "nothing else is the same," and offers testimonials as to the broad range of personal and social ills to be cured by the medicine:

> "Simmons Liver Regulator has done wonders for my wife. The doctors said she could not live and we made all calculations for the funeral. I thought I would try Simmons Liver Regulator, but did not think there was any hope. After taking three packages of Simmons Liver Regulator my wife is sound and well and the doctor says it is a miracle.
>
> Ed Difany, Norton, Ohio"

If there is anything to be learned here it is that we have advanced in the art of healing farther than in the practice of advertising, and it is indeed remarkable that the calculations of lift and drift which were to inaugurate the conquest of the skies should be scribbled out on a paper extolling the merits of a placebo. But then no one said progress advances equally on all fronts.

Certainly a by-product of all this patent-medicine fakery, cures by "suggestion" notwithstanding, and of the general medical uncertainty of the times was a skepticism towards doctors and medicine in general, matched by a reliance on the common sense remedies of home and tradition. To be regular, abstemious, or at least moderate and balanced in one's daily life, for instance, was a goal which had a

natural "homeostatic" appeal and which seemed to derive strength from observation of the effects of immoderation and dissipation among those who then, as today, overindulged in food, drink, work, or sex. In May, 1911, Wilbur wrote his father from Paris:

> "I caught cold about a month ago and have not been able to entirely shake it off. The Comptesse de Lambert has been giving me all kinds of medicines but as the reading of the testimonials, in order to get up one's faith, seems to be one of the principal points in the use of them, I apparently lose most of their virtue. The last one is a preparation of Dr. Doyen, a very celebrated Paris physician, and has a very interesting lot of pictures of microbes on the outside of the bottle. The story that goes with it, I understand, is that the blood contains both good and bad microbes. Instead of attacking the bad microbes directly, this medicine is supposed to incite the good microbes to jump onto the bad ones and destroy them. Stripped of all technical verbiage and fancy pictures the stuff seems to be merely a tonic in plain English. I have taken a few doses of the stuff and am depending on Madame de Lambert and Tissandier to supply the faith necessary to make the treatment effective." 86

Among the critically-minded younger generation, it can be seen that a more rigorous and experimental basis would have to be found for the practice of medicine.

Illness had made its tracks across the Wright family history as it does across all our lives. Milton and Susan had lost two infants - twins, a boy and a girl - between the births of Wilbur and Orville, and Susan of course had died of "consumption", a disease, incidentally, which many doctors of the day thought could be cured by having a woman do what seemed to make her fit most closely to her natural role - have more children.

In 1896, twenty-five year-old Orville was struck with typhoid which nearly killed him. It was largely due to the strength of one's constitution, the care of one's close relatives and friends, and the marginal effects of large doses of quinine that he or anyone else survived. Wilbur himself was to succumb to this disease in May of 1912, and it remained a family belief that his involvement in patent litigation had weakened him to the point where he could not successfully fight off the disease.

Bishop Wright combined both his more controlling and his more solicitous

paternalism with his sense of the moral value of moderation, and with his practical knowledge of preventive and therapeutic folk medicine, and he served as doctor and advisor to the family on health issues. He placed quite a premium on such indices as body weight, eating patterns, and sleep. During some church conflicts in 1902 he wrote Katharine repeatedly about the number of hours sleep he could manage (sometimes just 2 or 3 a night), and he noted in most of his letters the status of his weight - up or down, and by how many pounds. He also referred to "night sweats" which he suffered periodically during the conflicts.

Wilbur's health had been considered precarious since a hockey accident at age 18. A blow to the mouth which cost him several teeth was regarded as having weakened his nerves and resistances. Thus, at age twenty-five, when he and Orville had just caught on to the bicycle craze sweeping the country, Wilbur wrote his father,

> "We are all well as usual. We have been riding out on our bicycles nearly every night and I have increased in weight over ten pounds since you and Katie left. I weigh about 142. That is the highest I have reached for three years or more."[87]

The Wrights were not large men. Wilbur's weight averaged around 140 pounds and Orville's around 145, though at 5' 10" Wilbur was about an inch and a half taller than his brother. Sixteen years later a much older Wilbur wrote his father from France that

> "The outdoor exercise has been very good for my health. I now weigh a trifle over 150 lbs., about eight pounds above my usual weight." [88]

And it might be remembered that one of the original rationalizations given by Wilbur to his father for the potentially dangerous experiments at Kitty Hawk from 1900 to 1903 was that the sea air and outdoor activity would be good for his health.

> "I am watching my health very closely and expect to return home heavier and stronger than I left. I am taking every precaution about my drinking water." [89]

Typhoid was a constant threat to travelers who depended on uncertain sources of drinking water, as the itinerant Bishop had always been aware. He cautioned his boys about this matter, and was familiar enough with the course of the disease to prescribe the following treatment for Orville in 1896. Katharine, of course, was the recipient of his advice:

> "I am sorry that Orville is sick and sorry that I am away when he is sick. While I hope it may prove but a mild attack, I have grave apprehensions that it may prove a severe seige. ...Put him in the best room for air and comfort. Sponge him off gently and quickly with the least exposure and follow with mild friction. Let no one use the well water at the store henceforth. Boil the water you all drink and set it in ice water to cool. Use the best economy about rest. Be temperate in articles eaten. Be regular. ...Love to all, and sympathy for Orville in his sickness." 90

Orville received his father's advice again in 1907 when he came down with a mild flu in France:

> "I am sorry you are not quite well. You would better seek all practical exercise, and rub your flesh to the bone every day, and take a daily bath. Rub on each side of the spine but not on the bone." 91

All the Wright children obeyed their father dutifully, but Wilbur was the most dutiful of all. When he arrived at Kitty Hawk for the first time in September, 1900, he stayed with a Captain William Tate and his wife in their small frame bungalow, and took care almost from the outset to insure that safe drinking water would be available. As Capt. Tate recalled some 28 years later,

> "The next inquiry from Mr. Wright was 'Where do you obtain your drinking water?' The answer was surface well. 'I'd like to see it," said Mr. Wright.
> Now I will admit that I had some slight smattering of the question of surface wells and water pollution, and I know that my well would not meet the approval of a man who was a stickler on these matters, so very reluctantly I showed him the well. He made no comments other than this: 'I stand in mortal dread of typhoid fever, and while I am here I would like to have a gallon of water boiled each morning and put in the pitcher in my room. That is all the extras I will require.' The irony of fate is that he died of typhoid in 1912." 92

The real dangers of serious illness were enough to warrant anyone's concern and certainly family crises had occurred in the Wright home around these dangers.

Yet over and above such concern there was a tendency for the Wright children to somaticize their anxieties and worries. Katharine developed "neurasthenic" fatigue at many points in her life when the stress of meeting the demands of her role exceeded her considerable energies. And Wilbur masked his sensitivities and indecision during his late teen and early adult years with a belief that his nerves and even his heart had been weakened by a sports accident.

In March, 1885, Wilbur was playing hockey on a pond behind the Soldiers' Home in Dayton when he was hit in the mouth full-force by another boy's hockey stick. A doctor from the Home temporarily bandaged his bloodied face and the eighteen year-old Wilbur remained in severe pain for many weeks during which his wound healed and reparative dental work was completed. This injury was a major psychological as well as physical trauma for Wilbur, as he decided to postpone and ultimately cancel his intention - perhaps only half-hearted in the first place - to attend Yale Divinity School. From this time on for the next four years he was essentially housebound. His convalescence coincided, not by chance, with the slow decline in his mother's health, and he was thus able to provide virtual round-the-clock care for her. During the last two years of her life he would help her down the stairs from her bedroom every morning so she could spend the day in the parlor and see the family come and go, and then after seeing to her needs all day he would carry her back up the stairs to sleep. The emotional bond between these two "invalids" must have been great, and it is regrettable from a psychological point of view that we have only a piece of testimony to that effect, by Milton. He is quoted in the June 10, 1909 issue of the Marion (Indiana) Chronicle:

> "His mother being a declining, rather than a suffering, invalid, he devoted himself to taking all care of her, and watching and serving her with a faithfulness and tenderness that can not but shed happiness on him in life, and comfort him in his last moments. Such devotion of a son has rarely been

equaled. And the mother and son were fully able to appreciate each other. Her life was probably lengthened, at least two years, by his skill and assiduity." 93

Following his hockey injury Wilbur developed a fear that his heart had been damaged - a fear that he never overcame for the rest of his life. When he was burned at Le Mans over twenty-three years later, he wrote to his father,

"My forearm was bare and suffered the worst, though the scald over my heart had more dangerous possibilities." 94

Though the family could believe that traumatic injury might indeed unsettle the nerves or cause heart palpitations and anxiety, they grew more and more concerned with Wilbur's condition as months went by, and began to wonder whether or not his protracted recuperation was more attitudinal than physical. Three years after the accident, brother Lorin wrote Katharine,

"What does Will do? He ought to be doing something. Is he still cook and chambermaid?" 95

The suspicion that Wilbur's nerves might have been permanently impaired survived his eventual recuperation, however, and the family always seemed ready to believe that he was just a bit more vulnerable to stress, more easily "rattled", than he otherwise would have been. This explains his offering of a "health rationale" for his Kitty Hawk ventures, and perhaps it explains also the tolerance shown towards his unorthodox experimentation by a family which was particularly pragmatic and even conventional in its outlook. The very idea of man flying was enough to prompt giggles in most circles, and even ridicule and condemnation in others.

Father was concerned about Wilbur's nerves after the Le Mans burn:

"We are having a little fears (sic), that with so much care and burn, and labors and responsibility and constant watching, your nervous health is overtaxed." 96

For his part, Wilbur felt that he could discuss his nerves and the condition of his heart in a straightforward way with the folks at home, though he took pains not to worry them in turn. Complaints of stress effects, linked directly with his

physical symptoms, did not carry any accusatory implications that he was lazy or weak or faint-hearted. Faint-hearted meant literally what it said, not what it might imply in this more psychological age. He described his injury and its immediate treatment, prior to the visit by the "hoss docteur":

> "Fortunately, M. Bollée had some picric acid on hand and at once applied it. My escape from more serious consequences was doubtless due to this prompt treatment. The blister on my arm was about a foot long and extended about two-thirds of the way round my arm. That on my side was about as large as my hand. ...Except two or three minutes just after the accident I have suffered no pain..." 97

That, at any rate, is what Wilbur told his worrying father. Yet to Orville he confided a month later,

> "My arm is still sore. The raw spot however has been reduced to about ½ inch by 2 inches and I think another week will end it." 98

Orville was inclined to attribute some of Wilbur's difficulties to eccentricities and even a sense of "absent-minded professorship", as we shall see. But he also thought that Wilbur could get "shook" at times and make mistakes with the aircraft. In the pre-demonstration practice flights at Kitty Hawk in 1908, Wilbur's crash into the sand ended their venture prematurely, and was seen by Orville as due to a case of nerves:

> "Will then made three attempts to get off, but he seemed a little rattled, for every time he made some mistake in operating the handles and failed to get off. After dinner he started alone. After making one circle...he suddenly turned the front rudder down by mistake and plunged into the ground." 99

But if Wilbur's nerves were considered especially vulnerable, they were not the only ones. When Orville crashed at Ft. Meyer four months later, Milton was worried that his nerves would be harmed. This in part explained his need for information and his demands for daily mail from Katharine about Orville's condition:

> "I could get no word concerning Orville's condition; so I have been more uneasy than at any time since he was hurt. ...I have wanted to know the effect of the shock (jolt, jar) on Orville's mental strength and activity, but you never refer to that." 100

Orville's recovery proceeded without apparent psychological complications of

the sort Wilbur developed in 1885, and Milton was able to write Wilbur two weeks after he had visited Orville,

> "His brain and spine are not injured, and his mind is as clear and bright as before. ...His nervous condition is much better than I expected to see. ...Katharine is worn in caring for him, and cannot be in school this week." 101

We have seen how the Wright family drew together under the strains of illness and lengthy separations, and how father's intense involvement in the affairs of his children served to bind him to their fates as well as them to his wishes and needs. His concern that something untoward might happen to his sons took many forms, both real and exaggerated. Their health was one area in which this mixture of empathy and worry was played out, and a related issue was one of safety, particularly during their gliding experiments (1900-1903) and their trans-Atlantic travels (1907-1909).

During their months on the Outer Banks, Wilbur and Orville received many cautions from Milton. While always careful to mix a message of good luck and best wishes (his usual empathy) with his usual worry, he underscored the need for safety with repeated premonitions of disaster for his sons. "I have more fears than heretofore that you will expose yourselves to danger," he wrote them in 1902, and just a few days later he told them, "I hope you are recruiting health and strength. Be careful of life and limb. I have some uneasiness about you." 102

Wilbur was not only reassuring to his father, but seemed actually to share his concerns and to take them quite seriously. Nonetheless, he did not advertise or announce his experiments or his plans to his father in any detail until he was actually en route to Kitty Hawk for the first time. Though the family knew very well that he had become absorbed in the question of aeronautics since 1896, he had kept to himself- and to Orville - his plans to leave the earth bodily in a glider. So when on the way to the Outer Banks he stopped in Elizabeth City, North Carolina, for supplies, he wrote his father from a point beyond paternal intervention:

"I am at this place waiting for a boat to take me across Albermarle Sound to Kitty Hawk, North Carolina, which will be my address for the present. I supposed you knew that I was studying up the flying question with a view to making some practical experiments.

I chose Kitty Hawk because it seemed the place which most clearly met the required conditions. In order to obtain support from the air it is necessary, with wings of reasonable size, to move through it at the rate of 15 or 20 miles per hour. If there is no wind movement, your speed with reference to the ground must be the same. If the wind blows with proper speed, support can be obtained without movement with reference to the ground. It is safer to practice in a wind, provided this is not broken up into eddies and sudden gusts by hills, trees, and so forth.

At Kitty Hawk, which is on the narrow bar separating the Sound from the Ocean, there are neither hills nor trees, so that it offers a safe place for practice. Also, the wind there is stronger than any place near home and is almost constant, so that it is not necessary to wait days or weeks for a suitable breeze. It is much cheaper to go to a distant point where practice may be constant than to choose a nearer spot where three days out of four might be wasted.

I have no intention of risking injury to any great extent, and have no expectation of being hurt. I will be careful, and will not attempt new experiments in dangerous situations. I think the danger much less than in most atnletic games." 103

After what was indeed a very dangerous sail across a stormy Albermarle Sound in a leaky and rotted schooner "Cirlicue", under the pilotage of Israel Perry, Wilbur again took great pains to reassure his father about safety:

"I have my machine nearly finished. It is not to have a motor and is not expected to fly in any true sense of the word. My idea is merely to experiment and practice with a view to solving the problem of equilibrium. I have plans which I hope to find much in advance of the methods tried by previous experimenters. When once a machine is under proper control under all conditions, the motor problem will be quickly solved. A failure of motor will then mean simply a slow descent and safe landing instead of a disastrous fall. In my experiments I do not expect to rise many feet from the ground, and in case I am upset there is nothing but soft sand to strike on. I do not intend to take dangerous chances, both because I have no wish to get hurt and because a fall would stop my experimenting, which I would not like at all. The man who wishes to keep at the problem long enough to really learn anything positively must not take dangerous risks. Carelessness and overconfidence are usually more dangerous than deliberately accepted risks. I am constructing my machine to sustain about five times my weight and am testing every piece. I think there is no possible chance of its breaking while in the air. If it is broken it will be my awkward landing. My machine will be trussed like a bridge and will be much stronger than that of Lilienthal, which, by the way, was upset through the failure of a movable tail and not by breakage of the machine. The tail of my machine is fixed, and even if my steering arrangement should fail, it would still leave me

> with the same control that Lilienthal had at the best. The safe and secure construction and management are my main improvements. My machine is more simple in construction and at the same time capable of greater adjustment and control than previous machines.
>
> I have not taken up the problem with the expectation of financial profit. Neither do I have any strong expectation of achieving the solution at the present time or possibly any time. My trip would be no great disappointment if I accomplish practically nothing. I look upon it as a pleasure trip pure and simple, and I know of no trip from which I could expect greater pleasure at the same cost. I am watching my health very closely and expect to return home heavier and stronger than I left. I am taking every precaution about my drinking water. ..." [104]

Wilbur's emphasis on safety was not just an idle reassurance to a parent. He was a very sober, practical man, and if his arguments on behalf of safety reflected his pragmatism and his orderly, unromantic nature, it was not merely to calm his father that he worked so cautiously. His historical predecessors in gliding flight in the late nineteenth century - Percy Pilcher in England and Otto Lilienthal in Germany - had both been killed not because they lacked talent or courage, but because they had not explored every possible source of danger before taking to the air. Both had died in gliding mishaps due basically to their incomplete understanding of the need for three-dimensional control in the air, and especially to their illusion that they had achieved it when in fact they had not. Lilienthal had made roughly 2000 successful glides in the hills outside Berlin before his error caught up with him. The news of his death, incidentally, reached America and Dayton in August, 1896, while Orville lay in bed struggling for his life against Typhoid.

Though the history of others' ventures was enough to engender a certain degree of acution, Wilbur's own memory of painful physical injury was sufficient as well for that purpose. Furthermore, his loyalty was such that having once promised his father to be careful, he could be relied on absolutely to take no undue risks. So bound were he and Orville to any promise made to Milton that they never, not even in the pressured moments of December, 1903, nor in the crammed

practive period at Kitty Hawk in 1908, nor in the actual trials and demonstrations in France and at Ft. Meyer, failed to honor the Sabbath by laying down their tools and their ambitions for that day. This was in spite of the fact that they were not regular church-goers. They were very Christian in their beliefs, but never affiliated as adults with any particular church. United Brethren churches, especially after the 1889 schism, were hard to find, so they generally spent their Sundays reading, visiting friends, or relaxing.

Wilbur's promises were tried early on at Kitty Hawk when he climbed on the lower surface of the biplane kite, tethered at the end of a rope to a derrick, and asked Orville (who had joined him a couple of weeks after Wilbur's arrival) to play out the rope. As the glider rose in dips and leaps off the ground, he cried out to his brother, "Let me down!" Orville didn't understand Wilbur's anxiety at the moment, but when he returned to earth Wilbur explained, "I promised Pop I'd look after myself."[105] Wilbur could be forgiven if, promises aside, he grew fearful at being lifted up in the air by an invisible and poorly understood force which had killed so many before.

When Wilbur had finally achieved world recognition in the summer of 1908, Milton's entreaties for his safety took a more pragmatic turn, emphasizing Wilbur's value as a scientist and thinker rather than as an aviator. He also made a somewhat cryptic but, as we shall see, prophetic comment about Orville's dependency on Wilbur:

> "I think that, aside from the value of your life to yourself and to ourselves, you owe it to the world, that you should avoid all unnecessary personal risks. Your death, or even becoming an invalid, would seriously affect the progress of aeronautical science and a record of its advancement. Outside of your contacts and your aviations, you have much that no one else can do so well. And, alone, Orville would be crippled and burdened. Soon, others can do the flying, but you have a field for truth and science that no one else can fill. I think that you and Orville ought to take especial care of your health, as well as of your lives."

Milton added the following comment, having heard of Wilbur's being a passenger on

balloon excursions over the French countryside in 1908:

> "I do not approve of your balloon excursions in this stage of your experiments and business. There is some danger in them and any help they can give you is not needed now." 106

Wilbur did not need much persuading, though his displeasure at ballooning came not from its alleged danger. He characterized it in an article for the Scientific American as "a few glorious hours in the air, ...followed by a tiresome walk to some village, an uncomfirtable night at a poor hotel, and a return home by slow local trains." 107

In a similarly practical vein, yet hinting that some larger purpose was also involved, Milton entreated Orville and Katharine to return home from a 1909 trip to Europe on separate ships:

> "You are not ready to both die yet. It would leave a great burden on <u>us</u> and on the <u>World</u>. It is important that you both live." 108

Father's anxiety about the safety of his children seems to have risen naturally enough in proportion to his distance from them, and thus it reflected his general belief that one's overall well-being was threatened increasingly as one traveled from the security of the family hearth. And behind this feeling was the perhaps more basic "we - they" conviction that those not connected to one by blood relation were for that very reason a bit less trustworthy and more dangerous. Father's needs for control over this dangerous environment were manifested in demands for increased contact with his children, and in cries for mail. In this regard he was a diligent letter-writer and expected no less from those to whom he wrote. Indeed, there is always something of an assumption that failure to respond to his letters implied compromise with an alien camp. or having fallen into some regrettable state where something other than family sentiment had assumed priority in one's affairs. Bishop Wright felt that firm and constant control, tempered with compassion, over anything unruly and unpredictable in life - beginning with one's children - was the best means to

insure a degree of comfort and safety in life. Though it cannot be said that he did not trust his children, it is certainly true that he did not trust the "world" and did not trust the fundamental nature of man. In the internal doctrinal disputes of the United Brethren Church between "partial depravity" men and "total depravity" men (the argument as to whether man is mostly evil but can be saved by his natural receptivity to Grace, or whether he is all evil and can only find salvation in external Grace for which he has no natural disposition), Milton Wright was a total depravity man. Yet despite this belief, he was able to recognize in common-sense fashion when he had overstepped his bounds with his children, and over-worried about their capacity to resist temptation. He admitted to Wilbur in 1907, when Wilbur had gone to France for the first time, "I was perhaps a little childish in my feelings about having you go so far among strangers." [109]

When his family was around him, Bishop Wright seemed not only untroubled by issues of safety, but in fact felt secure enough to trust his sons' craftsmanship. On May 25, 1910, the family went out to Simms field (now a small section of Wright-Patterson Air Force Base) on the outskirts of Dayton, where Orville and Wilbur had worked so hard in 1904 and 1905 to turn their precarious motorized dunes glider into a marketable airplane. With faith in their machine reinforced by huge successes in France and America, Wilbur and Orville went up together in the same plane for the first time. Even more remarkably, 82 year-old Milton Wright then took off for a ride with Orville, and noted later in his diary, "Orville took me up 350 feet, and 6:55 minutes." [110] As he finally experienced the more exhilarating side of the enterprise which had earned his sons a measure of immortality, he is alleged to have exclaimed loudly over the sharp drone of the engine, "Higher, Orville, Higher!" [111]

## Mother Lost and Found: Katharine Wright

Thusfar we have seen how Bishop Wright's needs and attitudes revolved around the twin poles of compassion and control to form a tightly knit familt unit consisting of himself, Wilbur, Orville, and Katharine. He was thus able to foster intense feelings of loyalty and unity among these children, and between them and himself. We have also seen how Susan's death in 1889 represented a radical turning point in the development of these feelings, as it deprived Milton of the sense of emotional/maternal constancy he required and forced him to turn to his unmarried children for the fulfillment of these needs. Katharine in particular was shaped into a loyal and dutiful daughter, and it is her role in the family which now draws our attention.

Katharine's inheritance from her mother, as best as we can infer in the absence of direct evidence, was an independent spirit of mind, a self-sacrificing devotion to the home, and a willingness to achieve vicariously through close involvement with males. Her inheritance from her father, however, was a firmness and even stubborness of opinion, a tendency towards interpersonal dominance, and the strength to seek some achievement in her own right outside the home. As can be imagined, Katharine experienced considerable conflict as a result, even though her overriding self-discipline and conscientiousness generally brought her down on the side of her father's will. By and large, this will was that she be as much like her mother as possible.

In 1892 Katharine finished studies at Steele High School in Dayton and entered the college preparatory program at Oberlin College, where she spent two years before enrolling at the age of twenty in the regular college program. Her aim was to become a teacher. Though Milton no doubt had mixed feelings about sending his only daughter away to school, it is testimony to his sense of per-

spective and pragmatism that he did not interfere with this element in her independent growth. It was, after all, independence of mind and not of heart that had characterized Susan. Katharine graduated in 1898 and returned to Steele High to teach Latin and History. It was at this point that her destiny in the family began to take clear shape, undistracted by the sociability and excitement of being away at college. She was expected to take care of the home, her brothers, her father, and her job more or less indefinitely and tirelessly, in a kind of Victorian version of today's "Superwoman".

Katharine was strong-willed, socially gregarious and active, a natural talker with a biting sense of humor, careful about appearances and social propriety, and strong in defense of her opinions, which by and large were the conventional ones of the time. She had a keen sense of duty and obligation, especially toward her father, who served as the self-appointed critic and brake on her more outgoing and aggressive traits, which he saw as unlike his departed wife and undesirable in a woman.

This tension between Milton's will and his daughter's character was to flare into open irritation from time to time over the years, but at this time, in 1898, it was not too severe or apparent. Katharine went about her family duties and her social rounds with female friends, and was assisted in the housework once her teaching job began by 14 year-old Carrie Kaylor, who served the Wright household until Orville's death in 1948.

During this time Orville and Wilbur were busy as usual with their bicycle trade, and were seeking a suitable location to conduct gliding experiments.

In June, 1900, Katharine returned, as she would for many years, to the class reunion at Oberlin. A letter to her "bubbos" back home gives a flavor of her interests and preoccupations at the time. Having asked them to forward some money (they had not replied), she began,

"You will be likely to get several lovin' epistles if that money doesn't show up pretty soon. My address is 39 College Place, as you probably know.
...I hardly know where to begin, but I know you'll want to hear about Mag. Caesar was with her on the train. If possible he looked even worse than he used to look. Of course, Mag was snippy to him as usual. She told him the true state of her feelings. Anyway, she's going to get paid up all right for he simply insists on taking her to the ballgame Saturday. G. Harrison asked me so I'll save a quarter there!
...The President is swelling around and looking imposing and like a college president, generally. He's all right. ...Charlie Adams came in for a minute last night. Mr. Sheffield called on us last evening - in a dress suit. Mag was attired in an astonishing, short skirt and I had on a dirty shirt-waist! He stayed two mortal hours and me nearly died. You never saw anything so affected in all your days. He has a goatee which adds to his ridiculous appearance. He was just as friendly as ever but he is such a dude and so affected that I couldn't be natural and cordial. He is to sail for Europe on Wednesday of next week."[112]

Katharine went on to list several classmates in attendance at the reunion - people Orville and Wilbur apparently knew from innumerable mentions over Katharine's Oberlin years - and described the line-up in the ballgame between the alumni and varsity, the "social" one evening, and the Class Breakfast at Ladies Grove. "I will probably be home Friday," she says. "It will be dull to stay after the ceremonies are over."

Katharine's letters reveal a somewhat "gossipy" young woman, engaged in all the predictable subplots of a class reunion, with only a certain caustic quality in her judgements to distinguish her in any way from what would expect of anyone at such an event. In fact, in this environment she seems emminently "average" in her interests. We see no reflective or philosophical traits. Her observations are more descriptive than penetrating and focus on appearances, social standing, mannerisms, affectations, and the like. Her world seems quite adequately bound, it can be said with no pejorative implication, by the more obvious daily realities of who's doing what to whom, and in what style. Her interests at bottom are not contemplative nor imaginative, but rather practical, down-to-earth, and oriented by the wish to belong and conform to her social group.

Her verbal acidity catches our attention, then, because such sarcasm requires a certain distance from events and a certain willingness to risk alienation as the price of having a strong opinion.

We see that she is particularly harsh on the dandy Sheffield, who in spite of his posturing and costuming can mortify poor Katharine by his mere presence for two hours and prompt in her an adolescent self-consciousness about her "dirty shirt-waist" in comparison to Mag's "astonishing short skirt." And we see her devaluation of the unfortunate G. Harrison, who probably had little idea that his date needed to rationalize her acceptance of his company with the satisfaction of saving the price of admission to a ball game.

Though highly sociable among female friends, Katharine distanced herself from men. She maintained this distance through the devaluation, belittling, or criticizing of any man who might seek or draw her attention. She did not hesitate to share such sentiments with her brothers and her father, who were thus assured of her familial loyalty. All three children, in fact, of the Wright core shared what amounted to a "frozen adolescence" which locked them in to one another and prevented outside contacts from warming to life.

There is no sign that Katharine allowed herself romantic involvement with anyone, and if she ever had private feelings along that line they remained private. She did marry, at age 52, a Henry Haskell, editor of the Kansas City Star, widower, and member of Katharine's graduating class at Oberlin in 1898. But there is no evidence that she nurtured any feelings for him prior to the time of marriage. In fact, there is some doubt that the marriage involved romance at all, as we shall see in a later chapter. It proved to be a rather sad liaison, as Katharine died two years later, in 1929.

Her emotional satisfaction was always bound up intimately in the Wright family, in the rich relationships she maintained with her brothers, her father, and

with Lorin's children whom she dearly loved.

On September 5, 1900, Wilbur was busy packing his glider and personal belongings for his first trip to Kitty Hawk. As this was considered to be a "health vacation" and was Wilbur's first trip away from home by himself, Katharine fussed over the preparations like an appropriately anxious mother. She wrote Milton,

> "We are in an uproar getting Will off. The trip will do him good. I don't think he will be reckless. If they can arrange it, Orv will go down as soon as Will gets the machine ready. ...
>
> School begins next Monday. I am not sorry, particularly, for it has been lonesome for me this summer. I am to have all Latin; 2 new beginning classes, one second year, and the two I had last year."[113]

Perhaps Wilbur's imminent departure had accentuated Katharine's loneliness, for on that day she made an "impulse" decision to take a train to Chicago to visit her friends Harriet Silliman and Margaret (of the short skirt). On the train she realized that she had not written down her father's address (where he could be reached on his church travels), so she wrote instructions back to Dayton for the boys to write their father regularly in her stead. "You may be sure," she told him later herself, "they never paid one bit of attention to what I said."

She returned for the beginning of school, and her lonesomeness combined with a cold to make her miserable. School, "while very pleasant and not particularly hard" was not sufficient for her contentment.

> "I've been wretched with a cold for over a week and tonight I feel ready to go to bed and stay there, though I can't do that, of course, because school has begun. I take cold in the halls at school. I was better Sunday but Monday I took more cold."[114]

School seemed even more of a burden when Orville left on Sep. 25 to join Wilbur at Kitty Hawk, leaving Katharine alone at home since Milton was away on church business. She became restive and complaining about her lot, and wrote to father during a break period at school.

> "I know that if I wait until I get home from school, I'll be too tired to write. School has been so hard this Fall, some way or other. I am dead

> tired when I get home. Today is dreadfully hot, too and the children are restless. I like my classes, though. They are exceptionally good, I think. ...It doesn't seem to me that I do much but go to school & then home to rest.
>
> Orv went south Monday evening, to join Will. They got a tent and will camp after Orv gets there, which will be tomorrow morning. They can't buy even tea or coffee or sugar at Kitty Hawk, so Orv took a supply along. They also took cots and Orv took your trunk. I loaned my trunk to Will. I was glad to get Orv off. He had worked so hard and was so run down. They never have had a trip anywhere, since the World's Fair. They had a hard time getting anyone to look after the shop and do the repairing, but they finally got a young fellow by the name of Dillon, of whose honesty there is no doubt, to stay and watch the store and Cord Ruse comes in to do the repairing. Lorin and I are managers. ..."[115]

Within two weeks Katharine had fired Dillon and taken over the job. Though tired and run down herself, she proved sharply protective of her brothers' interests, and seemed always to put their welfare ahead of her own. She never complained of loneliness or fatigue to Wilbur and Orville but saved her woes for her father's ears instead. It was to him that she confided her forlorness, and gradually it was towards him that she directed the sorts of feelings characteristic of an intimate co-executive in the home.

But this was not accomplished without a certain ambivalence in Katharine. Her conscience, her sense of duty, and her love of her family seem to have conflicted rather severely from her 24th to about her 30th birthday with what we might infer was an active but not clearly articulated or "conscious" need to develop herself outside the boundaries of her role in the Wright home, to be free perhaps of the maternal inheritance of three unattached males. If this was indeed the cause of her restiveness, it bears remembering that it was not at all clear to her and operated on what we might think of as a very "repressed" level.

The picture of Katharine that has emerged from the Wright story is the culturally convenient and enobling, but simple, one of loving duty carried out without question or reservation. Yet Katharine's ambivalence is evident in her letters, which reflect not only her love but also her muddled resentments.

The day after Orville left to join his brother, Katharine wrote her father lamenting all the separations, including the fact that the absence of members of her family made it necessary for her to stay in a friend's house as she could not, according to proper custom, spend the night alone in her house as a single woman.

> "I will be glad when you come back and we can be at home. ...There is no news that I think of. I don't know anything but school nowadays." 116

> "As soon as you come home I will go back to the house, but I can't stay there alone. ...I am dead tired when school is out and no good for the rest of the day. ...I was not sure of the State and so carried my letter home to look it up. Then I forgot and mailed it without the State. I have been too tired this week to be accountable. Anyway, I am feeling a great deal better now." 117

Katharine had forgotten her father's itinerary, and then under the burden of writing him at the end of a long day and feeling perhaps a bit "abandoned" by her men, she "forgot" to check his route schedule before mailing the letter. And in spite of her improvement of feelings, she wrote a week later, again complaining of her intolerable state.

> "Yesterday I was not quite so tired but every other day, I have been utterly exhausted when school was out. ...I will be at home Monday, when you get home. Come Monday, if you possibly can." 118

Bishop Wright came home soon after this. "The boys" left Kitty Hawk on October 23 and arrived in Dayton late on the 24th. The school year seems not to have improved for Katharine as time passed, however, and it is evident in 1901 that the presence of her brothers in the home was no more of an answer to her fatigue and disappointment than was her busy involvement in school. In April of 1901 she wrote Milton, again away on a trip, after a lengthy PTA meeting at Steele:

> "I am nearly dead anyway this morning. ...It was 11 by the time we got home. Orv waited at the store for me. Mr Reeder took me as far as the store."

Offsetting the drain somewhat were Lorin's children:

> "I go past Baby Sister's nearly every day and she comes on a gallop, with her arms out, to give me a kiss. She is arrayed mostly in "Inette's" cast off garments but Baby Sister doesn't mind. She was down Sunday and said, "Grandpa isn't too he's house. He's gone away." She had no excuse for chasing up and down stairs." [119]

On the one hand, Katharine missed her father and wanted him home to keep her company. Yet on the other, she felt burdened by the responsibility of keeping contact with him so methodically through the mail, and by the burden of being "stuck" in an empty house while the men were so free to travel about.

On July 7, 1901 Wilbur and Orville left Dayton for their second season of experiments at Kitty Hawk. A few days later Bishop Wright took his daughter to the train station and saw her off on a two-week vacation to Geneva, Ohio, where she was to join Harriet Silliman and other friends. She wrote back that the weather was cool and the Lake wonderful, and even though there wasn't much to do she was grateful that socializing (with males) was at a minimum.

> "Mella has a good horse and a nice rubber-tired carriage. We ride almost every night. There is nothing else to do in a town of this size. Mella has just moved here so she doesn't know many people for which I am thankful. They have very few callers."[120]

More small talk was passed on a weel later, showing that social life in Geneva, if not Katharine's enthusiasm for it, had picked up a bit.

> "You remenber the girls we saw in the station at Dayton the morning I came away. Well, a particular friend of theirs lives here, Stella Taber who married Harry Ford, a classmate of mine. Harry's father-in-law is one of the organizers of a savings bank at Marion, Indiana, and they are all going to move there. I mean Harry and Stella and the Tabers. They think that Marion is a great place. We are doing absolutely nothing but visiting. We ride and wheel and drive "Billy" some.
>
> I have heard nothing at all from any of the folks. I wrote to Netta last week. I guess I'll write to the boys again, though they don't deserve it."[121]

If this was resentment on Katharine's part, it was not deeply felt towards her brothers. It became more or less the expected thing that she would tease them with her demands and they would tease her with their indifference.

The boys may not have deserved a letter from Katharine, but they did not deserve

what they were getting at Kitty Hawk either. Storms, mosquitos, unwanted "help" from gliding enthusiasts introduced to and imposed upon them by Octave Chanute, and puzzling failures in their calculations of lift from Lilientnal's tables all made it a trying season. Their glider was not performing as they had expected it would. Nonetheless, they persisted through the August heat while Katharine made a somewhat self-sacrificing trip with Lorin and his family to Atlantic City, New Jersey, and then south a bit to Ocean City. As with her trip to Geneva, it is difficult to discern whether she is happy or unhappy, bored or enthusiastic, as her edgy complaining and sharp toungue contrast with protestations that she is enjoying herself. She writes father a penny postcard on August 10 telling him of her feelings about Atlantic City ("We couldn't stand the place") and their activities at Ocean City:

> "Lorin went in bathing and is very enthusiastic over the salt baths. I was so tired from my miserable bed in A. City that I didn't have energy enough to go in. We are having a very good time."[122]

Though she enjoyed the boarding house where they stayed, commented on the nice Quakers who owned it, and claimed that the shore would be nice if only it weren't for the mosquitos, she nonetheless sounds bored as she did in Geneva, and turns her attention not to Netta or to the children, but to her brother Lorin, whose rejuvenation seems to become the primary reason for the trip:

> "It is quite enough here. There is nothing to do but to go bathing in the morning, walking on the beach in the afternoon and walking on the board-walk at night. I think Lorin is having a good time and I know that he will feel livelier for the change. He did need a vacation mighty bad and so does Reuch. I feel worried about him out in that hot old place. I have heard from no one since we left home. ...I am anxious to hear from the boys." [123]

One begins to suspect that Katharine, three years after college graduation, may have been well on her way towards settling into the role of maiden aunt to the Wright family, that her pleasure therein would be secondary to the pleasure of others, and that she identified very strongly with Father's function of worrying over his children. She was not one to spend a great deal of time analyzing

such things, however, nor was she inclined to look at her life in any introspective detail. Overlooking any special thought of her own psychological discontent, she focused instead on such things as bad hotels, the tedium of social routine, and the great Victorian release valve of real and imagined ills.

They returned to Dayton via a circuitous route, taking a boat trip on the Hudson River, a trip to Niagara Falls (Katharine preferred the Canadian side), and Pennsylvania. On arrival, Katharine unloaded her feelings to her father, again away on the road:

> "As a result of soaked feet three days in succession - on the Hudson, in New York, and in Philadelphia, I have been down flat on my back most of the time since I have been home. ...Carrie has not been here so I have had to do a lot of work no matter how I felt."[124]

Two days earlier a gloomy Orville and gloomier Wilbur had returned from a discouraging season on the Outer Banks. They had endured great hardship and discomfort only to see their carefully crafted glider perform in a marginal and unsatisfactory manner. Not only had their lift calculations, borrowed from contemporary authorities in the subject, proven inaccurate, but their own system of lateral control had not worked as predicted during turns to the right and left. (A rear vertical rudder was added to the design next season to correct this.) If they were to succeed at mastering both the principles of lift and three-dimensional control, it was clear that they had a very intellectually trying Winter ahead of them. "Never in a thousand years" would man fly, Wilbur had grumbled on the near-silent rail trip home.

Bishop Wright might well have been grateful to be absent from 7 Hawthorn St. during that unhappy week in which his three downhearted children struggled to lift their spirits.

Help came from without on August 29, 1901. Wilbur received an invitation from Octave Chanute, who had visited the Kitty Hawk camp that summer, to speak of his gliding experiments before the Western Society of Engineers in Chicago on

September 18. Wilbur vacillated, still depressed and befuddled by the observations at camp, and perhaps a little unsure of his capability to address a technically sophisticated audience. Katharine responded to Will's vacillation as a strong-willed and irritated woman might - she nagged him into acceptance.

> "Will was about to refuse but I nagged him into going. He will get acquainted with some scientific men and it may do him a lot of good."

Meanwhile Katharine chaffed for something of her own to do.

> "We don't hear anything but flying machine and engine from morning till night. I'll be glad when school begins so I can escape ... School begins the 16th. I wish it would begin right away. I am tired of doing nothing."[125]

She busied herself with getting Wilbur prepared for his speaking debut and with the general goings-on with Lorin's children, which she reported to father, who was about to visit Reuchlin et al. in Kansas.

> "Give Hubbie (Herbert) a lot of hugs and kisses for Aunt Katharine. Dear little boy! He'll never have a chance in the world with his mother and two sisters imposing on him."

She complained a bit about hired help ("I'm getting grey with trouble over washer women.") and described her routine with Lorin's.

> "I have been at home all the time, nearly. Baby Sister stayed with me three days last week and was too jolly and sweet. Baby Brother is beginning to look as if he might have some sense some days, if he keeps on. He's a dear little "Baby Blother", as Baby Sister calls him."[126]

Katharine's comments about Herbert reflected the feeling in the Dayton camp that Reuchlin had married into a burdensome relationship, and on October 2, she responded to her father's news from Kansas:

> "We are glad to hear that Bertha has improved and that Hub is as sweet as ever. We draw our own inferences as to Helen from your silence. If Reuch buys a dairy he will work himself to death, doing Lou's work as well as his own. It is such slavish business."[127]

We are left unclear as to whether the "slavish business" refers to dairying or marriage to Lou.

Wilbur's Chicago speech went very well, though as usual it fell to Katharine to tell Father the news. During a break at school a week after the speech, she took a sheet of paper ("Record of Pupils Leaving School Room") and wrote on the reverse side:

> "I would have written long ago but I thought Will would write about his trip to Chicago. I find that he hasn't done it, as usual. Last week, I was tired to death every day when school was out, not being used to talking, etc. It goes better this week ... The pupils who sit in my room are not so nice as they were last year, I think. I had five or six notoriously bad boys assigned to my room. I was ready for them and nipped their smartness in the bud.
> ... We had a picnic getting Will off to Chicago. Orville offered all his clothes so off went "Ullam", arrayed in Orv's shirt, collars, cuffs, cuff-links, and overcoat. We discovered that to some extent "clothes make the man" for you never saw Will look so "swell"."[128]

But soon enough it was back to routine for Katharine. She continued her loving attachment to her nieces and nephews down the street, continued to be the "communication center" for the family, continued her complaints of fatigue, overwork, and illness, and continued her responsibility to her father to be dutiful and prompt in her letters to him. Two of her friends announced wedding plans for December, but she seems to have had no particular response except to worry over gifts - a cut glass bowl for Margaret, and undecided for the other. She slipped once in her duties and "forgot" again to put a stamp on one of her father's letters. Writing in apology, she offered the explanation of illness:

> "I don't see how I could have mailed it without stamping it but it seems that I did. I am sorry, because you were disappointed at Eldorado. This week, I have been anything but well, consequently I have not done much (of) anything."[129]

Complaints about being tired, or not having "ambition enough to get a letter written" due to fatigue from school, or sometimes the error of mis-addressing a letter or forgetting a stamp, were as close as Katharine ever came to acknowledging any dissatisfaction with her role in the family. A similar error in wording came in an October 7th letter to Milton, in which she

seems to have confused Baby Sister's feelings:

> "I am sorry that you have been without a letter from home for so long. When are you coming back? I didn't understand where you were expecting to spend so much time. Baby Sister wanted to go to Grandpa's room and was disappointed when we told her that Grandpa was (sic) there."[130]

All in all, Katharine seems to have failed to arouse either sympathy from her father or help from her brothers in meeting his demands. If indeed her complaints arose from her resentment of this role and/or from her desire to receive sympathy and affection from her father, neither her own resentment nor her father's affection ever blossomed into direct expression. She complained irritably from time to time about her fatigue and loneliness, and he remonstrated with her about her bossiness and her temper. He never seems to have "let up" on her, and a clear double standard is present in his writings to his sons and to his only daughter. To the former he poured forth a generous supply of warmth and compassion. With Katharine he maintained an attitude not unlike that which Katharine herself held towards 15 year-old Carrie: "She improved a good bit under my constant superintendence."[131]

With this sort of understanding one can feel an empathy for Katharine, who finished a small litany of her winter miseries, offered in explanation of not writing to her father, and then asked for his return home:

> "I've been sick for two weeks and I've done my best to get the boys to write but with no result. I'm feeling better today. I was miserable on Thanksgiving Day - couldn't eat a thing! ... I have hardly been outside the house except to school. I haven't missed a single day yet. ... I am sorry you have been without a letter from home for so long. When are you coming back?"[132]

Dutiful at school and at home, the active and strong Katharine chaffed in the thankless role of the 19th century woman, whose purpose in life seems not only to have been one of constant service to others, but whose instinctual gratification was supposed to proceed so sublimely and naturally from such giving.

Yet there is a danger with the more egalitarian hindsight of today in overdoing the somewhat oppressive or confining aspects of Katharine's position.

She in fact was very much a woman of her times, and derived considerable satisfaction from successfully meeting the expectations of her roles as daughter/wife to her father, co-executive in the home, and Aunt Katie to Lorin's children. Her complaints generally eased with father's return home and it is likely that her discontent stemmed more from his lack of manifest or expressed appreciation of her, or her feeling of being taken for granted, than from the fact that it was he and not some other man with whom she was obliged to spend her days. Her desire for his company and support in the home remained high even though he occasionally devalued her in rather cruel ways, as in his badgering her for mail at Orville's bedside at Ft. Meyer, or in February 1909 when, after she had joined her brothers in Europe, he wrote her about the dangers of balloon rides:

> "It does not make so much difference about you, but Wilbur ought to keep out of all balloon rides. Success seems to hang on him, in aeroplane business.... I do as I please when you are away, and intend to do so when you come home, or get out of here. The idea of my making thirty-thousand dollars, and being bossed by you, who can save nothing, is ridiculous."[133]

This was pragmatism magnified for the purpose of inflicting pain, and no doubt it did.

Eighty-one year-old Bishop Wright showed some confusion of names and repetition of statements in his letters at this time, and he was embarrassingly aware of this. But it cleared up in a few months, apparently a temporary "lapse" of a minor sort, due to his advanced age. Perhaps Katherine's awareness of her father's age and his dependency on her over the previous twenty years softened the impact of his harsh feelings a bit. If not, she had little difficulty in responding in kind, as Father complained a month later:

> "Dear Katie:
>
> You give me the ugliest names you can think of when you write me; so I use what you hate so much."[134]

It is likely that the minor antagonisms between Milton and Katharine served not only to vent deeper frustrations (each was in sone sense a stand-in or substitute for someone the other did not have), but also to preserve a distance between them. Father's rather critical attitude towards Katharine flowed in large part from his loyalty to Susan, for whom he could never find, or accept, a fully satisfactory alternate. Thus it kept Katharine in her place even as it spurred her on with guilt to continual effort to fill the requirements of Milton's ideal woman. For her part, Katharine resented Father's impositions, and as she matured and he aged into increasing dependency on her, she fought him for a greater "say" and an expanded role in the household. Her relationship with her father, as much as the stratified quality of social roles at the time, sensitized her to power relations, so that she could not stand anyone who puffed himself up or put on airs, or was a "blow" or a "swell." Nor could she stand to "be at the mercy of the hired help," referring to working with Charles Taylor when Orville and Wilbur went to Kitty Hawk in 1902 (Taylor was hired to mind the bicycle shop, and was also very involved in construction of the aircraft and its motor in 1903). Nor could she be at ease with little Carrie Kaylor, who seemed at least in the initial years of her work in the Wright home to pose a problem for the authority-conscious Katharine. Katharine was always careful to define their relationship in unambiguous terms, with Carrie receiving clear messages as to who was in charge.

In September, 1902, with Milton off at church conferences and embroiled in a new controversy (see chapter 2), and Orville and Wilbur down at Kitty Hawk for their third season, Katharine was left again at home to look after the shop and worry about everyone. Her brothers soon heard from her.

> "I haven't heard one word form you yet and today I telegraphed to Dan Tate. I am sorry to put you to any trouble but you didn't tell you how I could reach you. ...We ought to have made some arrangement about that. It's a wonder I have any mind left. I'm worried vaguely about both you and Daddy. Of course

Dad was suspended but they gave him sixty days to repent and confess!

...Pop seems all right but I'm afraid that he is worrying a good deal. You ought to see the sympathy he gets from all the decent folks in town.

...The business is about to go up the spout, to hear Charles Taylor talk. Say - he makes me too weary for words. He is your judge, it seems. Everything that happens he remarks that it struck him that you left too much for the last minute. Today I got wrathy and told him that I was tired of hearing him discuss your business. But really - I don't see how we can keep things going. You didn't leave any checks or anything. ...I don't enjoy going to the store after money. Mr. Taylor knows too much to suit me. I ought to learn more about the store business. I <u>despise</u> to be at the mercy of the "hired man."

...Dad seems worried over your flying business this year. The habit of worry is strong in him. I am not much alarmed, having learned how "Ullam" considers his father and sister (ha! ha!) but don't run any risks. We've been worried enough for one year."[135]

Orville responded in a sympathetic and teasing way:

"...I would gather from the tone of (your letter) that our Swesterchen must be having a miserable time of it. Well, I am sending enough money to last you for a little while, I guess, but don't pitch in and spend it all the first day. I wrote Charles a few days ago. ...You will have to get used to some of Charles's peculiarities. They don't bother us.

...I suppose that by the time you get this letter you will be in school again. Send us a list of the first week's victims. I like to see someone else catch it besides us!"[136]

Katharine was perhaps the most status-conscious member of the family, and grew angrily impatient when the conventional social ordering of things was not born out in actual relations. As with her feelings about Charles Taylor, a defensive pride and protectiveness of the family often fueled her anger. She was reluctant to enter into any relationship which would involve a sunservient position. She was within the family the equal of her brothers, and always chaffed at not being the equal of her father in terms of authority within the home. The quickest way to stir her famous "wrath" or "biliousness" was to pretend a position of power or prestige which was overdone.

"Mr. Crane won his race on Decoration Day, with a margin of seven seconds. You <u>never</u> heard such blowing in all your life. It disgusts me."[137]

She also complained of Charles's being sick too much, ironic in light of her own characteristic habit of complaining of illness. It was perhaps not the illness as such that irked her, but the fact that Charles was not as self-sacrificing as she and allowed himself the weakness of staying away from work when he was ill.

Katharine was known as a firm and competent teacher who would brook no unruliness in her classes, and her comments over the years about Lorin's children reveal her to be a fair and loving woman who, like her father, was most loving when the children were compliant and desirous of serving or helping adults. Any indications of "smartness" or temper were squelched at the earliest opportunity. (One of Milton's ways of disciplining his grandchildren was to overturn a chair on them and sit on it, to "bring them down a bit".) Yet she was by no means oppressive or even authoritarian. Her attitude was precisely her father's, that children must be raised with a combination of warm love and hard rule if they are to grow straight and true.

When she applied this philosophy of management to the hired help around the house, however, she predictable ran into trouble. Finding suitable washer women was a chronic problem. Young Carrie - who, when she was hired in 1900, was so short she had to stand on a chair to reach the gaslight in the kitchen, and was so thrilled months later when she could finally reach it on tip-toes that she rushed to find Orville to tell him the news - this little girl was seen as a potential challenge to Katharine. When, for instance, she was to prepare brown gravy for Orville, who was very fussy about having no lumps in it, she received from Katharine only a warning to that effect. Wilbur, on the other hand, when apprised of Carrie's inexperience with making gravy, rolled up his sleeves, poured her own rendition down the drain, and patiently showed her how to do it. And on June 27, 1901, when Octave Chanute came to Dayton to meet the Wrights in person after months of correspondence with Wilbur, 15 year-old Carrie managed to earn Katharine's wrath

with an innocent act of egalitarianism.

> "Miss Katharine, the hostess, had decided on melons for dessert and gave instructions that if one melon, on cutting, proved to be better than the other, Carrie was to make sure that Mr. Chanute got a piece of the better one. When the time came, Carrie saw that one of the melons was hardly ripe enough to serve and took the liberty of cutting up the remaining one in small pieces so that everyone could have at least a taste. Carrie's impartiality evoked Katharine's displeasure and for a while, it seems, there was some doubt in Carrie's mind that she would ever be forgiven."[138]

In October 1903, when the boys had been at Kitty Hawk for a month and father was away, Katharine deliberately postponed Carrie's returning home from a two-week vacation because "I thought it would have a good effect if I showed a little independence. It did get pretty lonesome, with no one at all, around the house."[139] It was acceptable to befriend social equals and to have one's loneliness softened by their company, but it would have been very bad form to let the help know that you needed their emotional support, or any other form of support for which they were not strictly compensated. Wilbur and Orville, for that matter, had similar trouble with virtually all the men they hired to help them, from the bicycle shop through their flying exhibitions of 1911 and 1912. There was a rigid, structured distance maintained at all times - Orville was perhaps the least likely to be so strict about it - and the Wrights were quite stiff with people on their payroll. After four years in the Wright home, Carrie received a half-teasing, half-serious message from Katharine, delivered by father who had gotten the letter from his daughter: "Tell Carrie that I said she should be a good girl."[140]

There is only one indication that Katharine was aware of the importance of power in her relationships (for her it was not power, but simply the right order of things), and this came in a trip by the teachers at Steele High to a teacher's meeting in Cleveland, in October, 1903.

> "The Cleveland trip ... is stirring up a row as usual .... Mr. Miller, of the Big Four office, has offered to let fifteen go on the Wednesday afternoon train, the Twentieth Century Limited. He suggested that the men of the high school let the women go on the afternoon train and he would let them go at midnight. But the motto at High School is "Men first - If anything is left, women served." So the men are making a great row and it will probably end in no one going on that fast train..."[112]

Katharine did in fact develop a political sense of independence over the years and in 1913 she, Milton and Orville participated in a Suffragette march through Dayton. Had she been more psychologically minded or introspective she might well have observed further that the unwritten motto of the Wright home - if not most of the homes of the day - was the motto of Steele High. But Katharine was not that sort of woman. This isolated resentment of male teachers notwithstanding, she continued to live her life as if true happiness could be found in the self-sacrificing service of others more powerful than she. There is no evidence that she ever seriously questioned or realized the proposition as one which might be challenged or altered, save for women's suffrage. The needs of the family became her own needs, and what remained of her more personal needs either blended in with the existing family system or leaked out in somatic complaints which, as far as I can tell, were virtually ignored by Milton and her brothers.

The final months of 1903 saw Katharine through what may well have been the loneliest and most boring period in her life. Though she was never without company, usually old college friends, it was never sufficient to replace the fulfilling presence of her father and brothers. She kept up her physical condition - and reported thusly to Milton - by taking walks of four to six miles, and settled into the by-now well-known routine of keeping the home fires burning while Orville and Wilbur glided down the Outer Banks and Father made his far-flung rounds. Sample her letters to Milton at this time, and you

find the familiar themes:

> "... I have been staying at home at nights but I have had company every night.... Anna is to stay with me regularly. The house is so lonesome that I hate to stay in it but I can't rest as well anywhere else...."[142]

> "... I get up in the morning, get my own breakfast, go to school, stop up town at the W.C.A. for my lunch, come home and straighten up the house, get my supper, read and go to bed. I've done that same thing over and over, all week."[143]

> "... I have thought every evening that I would write but I have been so tired that I couldn't think of anything to write. I haven't been well for about a week. My stomach has been out of gear but I am better now.... Anna doesn't come over very early. Last night I gave her the key, so I could go to bed when I was ready."[144]

Even her friends seemed to have complaints which echoed her own:

> "... (Harriet) started to teach at LaJunta, Colorado but the climate didn't agree with her and she had to give up her school. She is at her aunt's in Morris, Illinois. Margaret is working in a Teachers Agency in Chicago. Mr. Meachem (her husband) travels and Margaret had nothing to do. So to keep from getting lonesome, she has gone into the Agency office. She does correspondence work." [145]

> "... I am glad you are feeling well. I am well, too, but I'm getting pretty tired of being alone. I don't care to eat when I have to sit down all alone and I eat too fast, besides. I'll be all right when you all get home again."[146]

On December 17, 1903 came the historic powered flights by Orville and Wilbur at Kitty Hawk. Having accomplished this, and having beaten out Samuel Pierpont Langley of the Smithsonian, who had attempted his second government-financed and ill-fated launch of his "aerdrome" over the Potomac on December 8, they headed home to Dayton. From that moment on, the family was to be physically together for three years, and we find a noticeable decrease not only in the volume of Katharine's correspondence, for obvious reasons, but also in her feelings of loneliness, tiredness, and ill health. Instead we find a stronger, more "managerial" Katharine who finally is able to execute her function in relatively uninterrupted fashion.

During a vacation with Oberlin friends in Geneva, Ohio in July, 1905, she carried on her executive function via the mail. Unable to turn over the home reins to a visiting relative (Emma), she kept tabs on the household and its management in a flurry of letters:

> "Dear Buro (brother)
> ... I wish you would telephone to Joe Boyd to cut the grass about the middle of this week. It gets so coarse when allowed to grow too long. And please put up one string for that honey suckle vine on the south porch. And see that the flowers get some water once in a while....Get up early Sunday morning and see that the children get washed and off to Sunday school!
> ... Take good care of yourselves and have a good time while you have a chance!"[147]

And three days later it was Emma's turn to be instructed, via Orville and Wilbur:

> "... You could tell our Emma to get some chickens and make sandwiches and devilled eggs et cetera if you wanted to have them out in the country for dinner. Milton could go out later and take the basket if you went before Emma was ready. And maybe Netta could go along to entertain Emma. Or Emma could get a dinner at home and you could make ice-cream or buy some for dessert.... And tell Emma to have my room cleaned nicely so (professor Dennis, with Emma) he could go up there and rest. If they stay just for the day it wouldn't be much trouble.... Please forward any letters that come. Emma could go to the post-office for the mail or order it delivered, when Pop is gone. I wish you would tell Joe Boyd to cut the grass. You can get him by telephone 356..."[148]

And four days later,

> "...I hope things are going all right at home. Tell Emma to give you a change in the lunch, if you get tired of the fare. Be sure to water the flowers."[149]

And ten days later, to Father,

> "... I hope Emma won't break the family purse by her grocery bills. I'll soon be home." [150]

The final undercut to Emma came on the eve of Katharine's return home:

> "... I hope Emma will have something decent to eat. She won't boss that ranch after I strike the place, I can promise her that. I hope things haven't been too uncomfortable. If you lay it on too thick about not missing me, the neighbors won't believe you. I'd be moderate about it, if I were you..."[151]

Apparently Milton too was familiar with the notion of "showing a little independence!"

The criticalness of the Wrights - and Katharine was perhaps the least politic and the quickest to strike - was held in check against one another in various ways. For one, they all shared a certain "plain folk", pioneer honesty in their perceptions of others and of themselves, and this allowed each member of the family to be aware of - and largely to accept - his/her faults and weaknesses. They all teased each other quite a bit, and this also served to discharge hostilities and deliver criticisms in a humorous or tempered way. Wilbur was a master of sarcasm and understatement, while Katharine tended towards a pattern of outbursts, followed by backpeddling and apology, and overshadowed by her dominating love and devotion to the family. On July 4, 1908, the day Wilbur was burned, Katharine wrote an apology for her previous letter, in which she had scolded him for his blaming Orville for the wrecked condition of the Flyer when it was unpacked at LeMans:

> "Sister's conscience has been biting ever since I sent that last letter giving you such a blowing up. Brother (Orville) says he had no kick. He wants to know when things aren't right. Some way I got so discouraged I didn't know what to do. I hope you are finding things more satisfactory by this time. It must be something fierce to have no help except a foreigner who can't understand anything you say. I wish Orv could be there with you until the trials are over..."[152]

Orville sometimes objected to being "talked down to" by his older brother, but ordinarily anger by Wilbur did not phase him. He was a practical joker and the family "imp" who seemed simply to absorb with minimal effect, even managing a laugh, the occasional overdone outbursts directed at him in frustration. He was the "bad boy" of the family, to the very minor extent that any of them were ever mischievous, but he was so "unrufflable" that he

rarely responded to attack by escalating or responding in kind, and thus the hostility was allowed to pass harmlessly by.

Bishop Wright seems to have had little obvious humour in him, though he was very tolerant of teasing and sarcasm, and was not an overly rigid or repressive sort of minister. He was the sort of man who favored "good, clean fun" without the capacity to enjoy participation himself. His criticisms took the form of moralizing and counseling his children. He was in some ways a subtle manipulator of his children, though he never would have thought in those terms. He displaced many of his hostilities into the "moral warfare" of his struggles in the U.B.C. and against the wages of sin in general, and his intolerance was modified in the home by his warm capacity for love and empathy, and by the fact that he was indeed blessed with dutiful, compliant children. His worrying over Wilbur and Orville represented a kind of emotional compromise between his wish to keep them warmly under his roof, and his wish to control their lives from a distance.

With Katharine, as with the others, then, there is a refreshing sort of self-deprecating self-awareness of her more acid traits. She comes across as not a prig or a "boss" but as someone who means only the best and who can love and care as well as dominate.

Yet it is doubtful that too many people outside the family and her close female friends ever saw this other side of Katharine. The judgementalism and "school-marmish" propriety was unadulterated by any self-disclosing or intimate confidences, and considerable defensive distance was maintained. Intimacy was a family affair. For all the world, Katharine appeared every inch the Mid-Western Spinster Aunt, clinging lovingly, and maybe longingly, to her nieces and nephews, and bristling if anyone should suggest that she was less than

happy devoting all her care to the immediate family. She was a powerful and a proud woman, conscious of her own image and standing in the community, and equally conscious of the family's image in the community. To say that she was sexually repressed is no less accurate yet no more meaningful than to say that most people in those days worked on Saturday. The very idea of being sexually expressive in any way simply was not a choice. I am convinced that Katharine Wright rarely, if ever, gave even a single semi-conscious thought to "sex" as such. Her needs for intimacy, if not for physical sexual contact, were realized in very indirect ways, always in the context of family intimacy or among close female friends of similar, even identical, social and educational background. And such contacts always proceeded under the banners of Duty, Decency, Service and Sacrifice. For that matter, in the area of sexual expressiveness, the lives of Wilbur and Orville were very similar to Katharine's, save for the greater freedom they enjoyed for energetic outlets or alternatives. Katharine's recompense was the enjoyment of power in the home, which she acquired increasingly as father aged.

Katharine had both power and a degree of contentment in the home during 1904, 1905, and 1906. Her letters home from annual vacations in Geneva indicate this much, though to be sure, the infrequency of correspondence during those years when all the Wrights were together limits our capacity to draw inferences about these years, Katharine's 30th through 32nd years. She took active interest in her brothers' progress in perfecting their Flyer and their attempts to market it. Though they had their difficulties in the less forgiving wind and terrain conditions of central Ohio, and had been forced to improvise a launching device of derrick and weights, family unity was probably at a peak. However much Katharine wished for her brothers to be successful, she cannot

but have preferred to have two struggling brothers at home than two successful ones away. Not only were Orville and Wilbur her closest companions, they were also buffers of a sort between her and her father. When they were at home, Milton was more at ease, and when he was at ease, Katharine's life was proportionately lighter.

In 1905, rumblings began concerning the actual marketing of the Wright invention, and over the next three years the family was to become absorbed in the process of negotiating with governments and investors. These would prove to be trying times for all concerned, and we shall see later on how the family dealt with those trials, and what stress Katharine was again asked to endure.

## TRIALS OF THE RIGHTEOUS

It is difficult to locate the Wrights on any political or social matrix of liberal/conservative attitudes that would make obvious sense to contemporary standards. Certainly they were not rigid in their approach to solving technical problems, nor were they conventional in their notions of progress. Wilbur in particular required some familiarity with the unorthodox in order to endure the criticisms which came his way in the early days of his experimentation, when many scientific authorities and most laymen considered powered flight the preoccupation of cranks and impractical dreamers. Of the two brothers, it was he who initiated the investigation of library sources, tested kite models of the control system he and Orville had discussed, and contacted the Smithsonian for further written material on the subject. They were clear, independent thinkers, and fair in their dealings with others - so fair that they were sometimes felt to be a bit strict. Their public and private morals contained not one instance of duplicity or hypocrisy.

Yet in spite of their honesty and their faultless adherence to a solid moral code, the Wrights as a family found themselves repeatedly at odds with many established - certainly not immoral - groups, and it is a puzzle why this plain-dealing and upright family should have found itself so consistently in conflict with others, and so thrown in on its own resources. They circled their wagons defensively around the Wright core on several occasions, in long-term disagreements with institutions as diverse as the United Brethren Church, the Press, the Smithsonian, the United States and French governments, and other aviation investigators, History has generally vindicated the Wrights in these struggles and documented a record of which few of their "opposition" could be proud. Yet, vindication or accusation aside, it must be

said that an examination of the origins and nature of the Wrights' persistent defensiveness, and the persistent antagonism of so many others towards them, is needed.

THE UNITED BRETHREN

One hesitates to hang too much history on the Rush County - Kentucky border limb of the Wright tree, but at the same time it is difficult to escape the powerful memory of young Milton growing straight and strong against the grain of his masonic moonshining neighbors in the heavy shade of Dan Wright's strictures.

In his ascent through the loose hierarchy of the U.B.C. Milton gained a reputation for strong beliefs, cautiously adopted and then vigorously defended. Friends at Hartsville College remembered him as being "more than ordinarily cautious, conservative, and methodical in all that he undertook, and when he once decided his course he was hard to turn from it."[1] His son Wilbur would prove to be of similar intellectual character, as Katharine noted distressfully in 1902 to her father: "When he gets a thing on his mind, he thinks of it continually."[2]

It is not clear whether the Rev. Milton Wright was a voting delegate to the 1861 General Conference of the U.B.C. but he endorsed the proceedings wholeheartedly. The Church voted a pro-Union stance in the Civil War, and Milton later had no hesitation in preaching that the Lord had intended the Civil War to overthrow the evil of slavery in the South. The U.B.C. predictably lost membership over this issue, but was prepared to do so in the interests of defending a principle of such fundamental moral importance. No doubt this uncompromising attitude was a quality of the Church which had appealed to Milton from the day he considered joining it. In the General Conference of 1865, held May 11 in Linn County, Iowa, Milton was one of

three delegates representing the White River Conference from Ohio.

> "When in the first days of the session of the General Conference, news came of the capture of Jefferson Davis and his staff, the members of the Conference joined in singing "Praise God, from whom all blessings flow."[3]

In the next General Conference, held every four years according to the Church Constitution, Milton was elected editor of the main Church organ, the Religious Telescope, and he held this post until 1877 when he was elected a Bishop. As editor of the Telescope he was entrusted with considerable responsibility, and it is testimony to his orthodoxy within the U.B.C. that he held the position for eight years before being "promoted" to the bishopric.

> "By his strain of Puritan blood, by primal instincts, and by association, Milton Wright was committed to moral reform. His outlook was not confined to his own Church but extended to society at large. From first to last he was opposed to slavery, the rum traffic, and secret societies. His position in the earlier part of his career was strictly that of the Church at the corresponding time. His being made editor in 1869, and Bishop in 1877, was with the understood purpose on the part of the majority in the General Conference to make stronger and surer the historic position of the Church in regard to secret societies. Under the stress of experience, and with changed conditions, the Church, almost unconsciously to itself, came to change its methods if not its attitude in dealing with such societies; but Bishop Wright, with some others, stood by the traditional position of the Church without change."[4]

In the 1870's and 80's there were pressures for change at work within the Church, and these would eventually lead to Milton's estrangement from the majority of the Brethren. In the General Conference of 1873, held May 15 in Milton's own Dayton, three subjects which had nipped at the heels of the Church's traditional beliefs and policies closed in on the delegates. These were: membership in secret societies (basically the Masons), lay delegates to the General Conference, and "pro rata" representation, or representation at the General Conference in proportion to the size of local Conferences. The majority of the delegates were in favor of changes toward "loosening" up the Church's restrictions in these areas, but the conservative minority, of which

Milton Wright was an outspoken member, held up action on the changes on the following technical point: the Church's constitution required that any changes in that constitution would require a vote of at least "2/3 of the whole society", and the conservatives held that it was unclear whether the proper interpretation of this should be 2/3 of the delegates to the General Conference or 2/3 of the membership at large. This proved unresolvable so the issues were tabled for four years, until the next General Conference in 1877.

This Conference met on May 10 in the chapel at Westfield College, Westfield, Illinois, and it was here that Milton Wright was elected Bishop. Conservative strength had solidified since 1873, probably due to the vigor of Rev. Wright's editorials in the Telescope, and this Conference again beat back the effort to liberalize the Church's strong stand against the Masons.

But the wishes of the apparent majority could not be held in check for long. In 1881, Milton was not re-elected Bishop. All five bishops of the U.B.C. were present in Lisbon, Iowa for this 18th General Conference, and the struggle between liberals and conservatives fought itself to a draw, neither side wishing to really test its strength. Pro-rata representation was approved, by a vote of 60 to 57 so larger Conferences could send proportionally more delegates to the quadrennial General Conference, but the hotter issues of lay delegates and membership in secret societies were shelved. Milton proved to be a rather poor politician in this Conference, alienating both liberals and conservatives, prompting his failure to be re-elected to office, and thus paving the way for future liberalization. He had proved as unbending to the wishes of his own conservatives as he had been towards the demands of the liberals, and he thus cut himself out of the game altogether on principle. A.W. Drury cites two reasons why Milton was not re-elected: "Of course, he could not expect much support from the liberal delegates. Then, he had

alienated some persons on the radical (conservative) side, because in certain cases he was not pliant to their wishes."[5] H. A. Thompson suggests an additional cause, in a more conspiratorial vein: "In one conference, an evil man had the ascendancy and used all his arts, not only to hold his friends, but to injure the bishop's influence, when he found it could not be made to implicitly serve his purposes."[6] Thompson's information came in part from Milton Wright himself, so we are perhaps on more solid ground in assuming merely that Bishop Wright was too rigidly principled a man to play politics with much success. In his hands the art of compromise stiffened reflexly into a sword for righteous combat.

Milton's response to his ouster from power was characteristic of his strength and resilience in adversity. He determined to re-empower the conservatives through writing and sermonizing in a journal he founded in March 1882 expressly for this purpose. It was the Richmond Star, printed in Richmond, Indiana (near Wilbur's birthplace of Millville) and he served as its editor and publisher for the next three years.

His writings must have been effective, for at the 1885 General Conference in Fostoria, Ohio, held May 14, he was again elected Bishop but was transferred far away to the Pacific Coast Conference. Others were apparently more adept at power plays than Milton Wright. By this move, he was given an office he could not in good conscience refuse and was sent where time and distance would have a diluting effect on his influence. Milton did work out something of a compromise here because of his wife's illness, and he managed to make his appointment to the Coast a six month per year commitment, rather than move his family and sick wife so far away from Ohio.

Also at this time Wilbur was just beginning to recuperate from the facial injury he had received in a hockey game the previous March, and was for all in-

tents and purposes housebound with his ailing mother. Milton's travel time was thus much increased from 1885 to 1889, as he "commuted" intermittently rather than spend six straight months at a stretch away from fis family. In these four very critical years for the Wrights and especially for 18 year-old Wilbur, Milton's third son found himself stuck between high school and college or a career, and fell into the role of caring for his mother as her health slowly deteriorated., and of serving as spokesman and pamphleteer for the itinerant Bishop Wright. These years were formative in shaping Wilbur's intellectual and moral character in close model of his father, much more so than any of the Wright children.

The General Conference of 1885 decided to break the stalemate of liberals vs. conservatives that had struggled painfully toward such inconclusion for so many years in the UBC. It set up a church commission of 27 members which would prepare amended forms for the church Constitution and the church's Confession of Faith, and would submit these changes to the entire church membership for approval. In addition, the General Conference approved a modification in the ban on membership in secret societies by a vote of 76 - 38.

> "In the long discussion attending the adoption of these measures, the minority, drawing their weapons from the past, made the strongest possible presentation of their case, but time and tide were against them. The presentation on the other side, if less defiant and obstinate, was not less effective."[7]

There were at the time six bishops in the UBC, and all six, including Milton Wright, were placed on the commission. Thus it was the intention of the liberals to gain a "de facto" legitimacy for the existence of the commission by having even the conservative bishops participate in its workings. The two conservative and therefore dissenting bishops - Wright and a man named Dickson - refused to attend the commission meeting in Dayton on Nov. 17, 1885.

The commission proceeded without them and three years later submitted to

the whole church membership for approval proposals for a changed constitution, a new Confession of Faith, lay representation at General Conferences, and modification of the ban on membership in secret societies. All four changes were approved by margins of about 10 to 1, though it is not clear how many of the conservative brethren simply boycotted the vote in protest, and in support of the two conservative bishops.

Throught, Milton and his sons Wilbur and Orville had been active in advocacy of the radical position. In 1885, on being re-elected Bishop, Milton had countered the move to place him in Pacific semi-exile by starting still another newsletter, the Christian Conservator. This was the main publication of the conservative wing of the church, which coalesced around its natural spokesman in Dayton. Reuchlin was also connected with this paper for a time after his marriage to Lulu Bilheimer and before their move West. But it was Wilbur, with his expressive skills and time on his hands, who championed his father's cause by writing his own tracts in defense of the radicals, by printing with Orville's help and on a printing press of their own design and construction the Conservator and related pamphlets against the opinions of the church commission, and by responding editorially in his father's absence to charges levelled at Milton in liberal publications. A surprisingly feisty Wilbur demonstrated just three days short of his twenty-first birthday the wry acerbity and legal cunning which would always mark his dealings with opposition. He fired off a shot at a liberal Reverend McKee, who had suggested that Wilbur was too young to be writing editorials. "Dear Brother," Wilbur addressed the older clergyman,

> "Your complaint that I am only a boy sounds rather strange coming from the lips of a liberal. They have been complaining for years that the Radicals were "old fogies", "antediluvians", etc., and rejoiced that they would soon die off. Now to suit the exigencies of the times you complain that they are too young! You seem to infer that I am too young to tell the

truth. Is there any precise age at which men become able to speak the truth? I know children not five years old who tell the truth and I know men more than fifty years old who do not tell the truth. It has not been the custom, heretofore, to grade the truth of statements by the age of the person giving voice to them. When writing that article, I aimed to give a plain statement of undeniable facts. If you can find anything untrue or incorrect in it I will gladly make correction. If any member of the Commission has any additional information of the proceedings of the Commission, I will gladly add it to my statement. I simply wish the Church to know what actually did happen that day. I enclose a copy of the article. Will you please mark any incorrect or untrue passages, and tell in what respect they are incorrect or untrue, giving your authority for such denial?
If my account is untrue, a denial of it item by item, will be in order; but if it is true, it is unworthy of a man of your position in the Church to take advantage of my youth to discredit statements which you would not venture to discredit otherwise."[8]

A few months later, the formally adult 21 year-old Wilbur informed his father:

"The tract is producing a big stir. The liberals can't hold still, and every movement they make only draws out some new admission. We have sent out over three thousand. Reuch has 1100 at the convention. When we begin to circulate them <u>free</u>, there will be fun."[9]

All six bishops were present when the 1889 General Conference opened in York, Pennsylvania on May 9. One can imagine the tension as a statement by the Commission was read before the delegates, announcing approval of all amended changes in the Constitution and Articles of Faith. When the statement had been made, all eyes turned to the Dayton Bishop, who rose to voice his exception from the Commission recommendations. It would have been no surprise if he also took the opportunity to denounce the Commission's whole purpose as illegal and without foundation.

"The debate on the approval of the report on the amended Confession of Faith and Constitution was able and prolonged, and for the most part dignified and courteous. The minority, however, stood by their "protest" of four years before, which virtually declared that they would "never submit" unless their views and interpretations were followed."[10]

A conciliatory gesture by liberal Bishop J.W. Hott was spurned by the conservatives: "We hereby express our appreciation of the honesty and sincereity of our brethren opposed to the action of the majority of the Church, and we honor them for their faithfulness to their beliefs."[11]

A vote on the adoption of the new proposals came on May 13 and favored the liberals by 110-20. Milton's former conservative ally, Bishop Dickson, either changed his mind or lost his nerve and cast his vote with the majority. At the conclusion of the vote, 13 of the 20 dissenters rose and left the hall, led by the sole bishop, Milton Wright. They rented another hall in York, pulled up some chairs, and declared themselves in an act of utterly blind self-conviction to be the true and legal General Conference of the United Brethren Church, 1889. They continued to meet every four years after that for several decades, and were distinguished from the main body of the Church by putting the words "radical" or "old constitution" in parentheses behind the U.B.C. name. At this first General Conference of the U.B.C. (Old Constitution), Milton Wright, Halleck Floyd, and H.T. Barnaby were elected bishops. (In pure coincidence, all three served until 1905 and died in 1917). Milton was also elected, to no one's surprise, publishing agent for the new minority church. Before finishing their official business, the majority Church delegates formally severed the dissenters from membership in their branch of the Church, and therefore each branch was from that time on to consider itself the "one true U.B.C.". It must have been a very hard time for Milton, as his loyal and modest wife was dying of tuberculosis in the midst of this controversy. During the General Conference in York, Wilbur wrote reassurances about her health to his father, and offered encouraging words about the effect of his father's moral dissent on Church members in Dayton. Immediately following

the walk-out he wrote to Milton,

> "The division occurred with less seeming bitterness than I had expected. The attempt of the liberals to expel you from a church you never belonged to was more ludicrous than mean. I see that Dickson has accepted a re-election as Bishop. If it is his intention to accept the office in order that he may be in the position to lead a movement back to the church in case the radicals are declared the true church, it will do; but if he intends to stick to the liberals through thick and thin it is as clear a case as Hott's from years ago.
>
> It is possible that when the case is decided against the liberals they may return to the church with the intention of securing control of the next general conference and thus getting the offices again. To guard against this it might be well to extend the time necessary to render eligible to General Conference, in order that those who now leave will not be eligible to the next General Conference in case they return before the expiration of the first year. After eight years there would not be any trouble.
>
> Mother is about as usual. The excitement does not seem to have harmed her much. Her appetite is a little variable, and sometimes she gets a little weak.
>
> A number of rumors are in circulation here, but I guess they are mostly"straw". Public sentiment here is not altogether with the liberals."[12]

It was not a Wright trait to be swayed by majority opinion. Of 207,800 members of the U.B.C. just prior to the schism, only 20,000 left to join the Old Constitution branch. It was also not characteristic of the Wrights to let bygones be bygones when they felt that a wrong needed righting. The minority church filed several lawsuits in many states, seeking legal possession of land, buildings, printing equipment, and other belongings which, if in possession of the majority, were felt to be the property of the "true", minority church. Milton Wright led these battles in the courts, with a suit to obtain all the property of the majority's Printing Establishment, then under the direction of Rev. W.J. Shuey, Milton's counterpart as publishing agent for the majority branch. This entire legal effort consumed many years and much energy on both sides, and in seven states litigation wound its way through the appeals process to the State Supreme Courts. In all states except Michigan the conservatives lost their case. Put simply, the Supreme Court judges ruled that the issues were basically internal church matters,

and that once these had been settled at the highest level of appeal within the church, that settlement could not be overturned by secular authority. Moreover, since the orifinal UBC constitution and confession of Faith had been adopted by concensus, they were not so absolutely binding that they could not at a later date be considered above and beyond modification by a similar consensual process.

Wilbur did not see it that way, however, and as the suit went before the Ohio Supreme Court ten years after the York secession, he outlined his thoughts to his father and expressed his hope that their attorny, a Mr. Young, would argue forcibly enough for their side. Wilbur's beliefs about this case are quite revealing, not only of his deep loyalty and devotion to his father, but also of his attitudes towards authority and the dangers of a truly democratic process:

> "I hope that Mr. Young will insist strongly that there is no law in America requiring churches to leave the essentials of faith and practice to be legislated upon from time to time as majorities may dictate, but that on the contrary it is the privilege of churches to protect the rights of their legitimate spiritual children in future times, by 'extraordinary and impracticable' restrictive rules, whenever it may be deemed necessary to adopt such rules for the protection of those who have inherited the spirit of the founders.
>
> ...The Fathers knew what they were doing; they had a right to do it; the Court is bound to protect that right."[13]

What we see here in plain transposition are the guiding principles of the Wright home. Father's rule was benificent but absolute, creating a climate in which authority was regarded as legitimate and rather beyond question or need of question. It was the natural order of things for fathers to rule their charges in this manner, and "unruly" challengers of paternalistic authority were seen in violation of a basic trust and obligation.

Besides the "father knows best" feeling evident in Wilbur's letter is a truly conservative moral mistrust of relativism and majority rule. There is

a tendency to resist the notion that rules and laws, made by man, can be as easily unmade or changed by him as well, and a belief that laws, once constituted, assume a life of their own beyond the reach of their creators. Underlying and motivating this belief is generally a basic mistrust of human impulses, a fear that man is indeed "totally depraved", which generates a heavy investment in a strict conscience and a watchful moral eye. The Wrights were not prepared to trust their fellow man on principle, and not without some manifest proof of worthiness and reliability. Their predominant moral conviction was that fealty to legitimately established authority was the surest and indeed the only means by which one could survive the vagaries of a wicked and hostile flesh. Politically they were Republican, reflecting in this way on a political plane what they felt on the moral. Essentially righteous in their social/moral posture, they moved not only in favor of what they felt to be proper, but also against what they felt was not. Their spiritual ideal was not so much a peace without sin as a war against sin, based on the deep, disquieting anxiety that sin might prove stronger than virtue on any given day. This activist necessity pushed their morality over the clouded boundary between God and Power, between the spiritual and the political, between church and state. And therefor one is tempted to place the Wright struggles in the UBC during the lawsuit decade of 1889-1899 in the tradition of American righteousness which has shaped our politics down to the present day. In the majority (liberal) church's 1921 General Conference, held in Indianapolis, William Jennings Bryan orated against "Darwinism" and in favor of the "Biblical" concept of creation. His lecture "completely captured the audience, and probably was the prompting cause of a strong resolution calling for adherence to the fundamental principles of Christianity."[14]

Yet it would be a mistake to read the content of modern moral fundamentalism

into the thinking of either Milton or Wilbur Wright. Milton's opinions were often very "liberal" even by our standards, and it can never be said that any of the Wrights was afraid of an intellectual concept or theory. It is really Milton's style that interests us rather than the content of his beliefs. His beliefs were held forcefully and with an iron-clad sense of resolve. They included not only the total depravity of human nature, but also the notion that women should be freer to pursue a profession, a notion that then, as now, aroused the deepest of men's fears and insecurities. It thus should put the brakes on any simple analysis to realize that Milton was capable of holding at one and the same time very strong needs for woman to be in her place and very powerful opinions that she should be free to seek her own destiny within a career, albeity that career as he saw it was generally one of serving others.

> "While the Bishop is conservative, he is independent in his judgement, and aggressive for that which he believes to be the truth. In an editorial, January, 1870, on "Women as Physicians", he says:
>
> > 'That women have the capacity to become successful physicians, no one can have any doubt; and that virtue and decency would place in their care the treatment of their own sex in such cases as involve delicacy, is too clear to require an argument. We hope the day is not far distant when female physicians will abound. we have no doubt they will excell in this practice, and we are sure that virtue and decency in both sexes would be not a little advanced by the accession of intelligent, noble-hearted women to the medical profession. We do not doubt that another generation will find woman filling her proper place in this profession, free from the prejudices which now beset her path, with a tenacity not excelled by the spirit of caste, which disputes every inch of the advance of colored men in personal and political elevation.' " 15

Towards the end of the 1890's Milton found himself once again at the center of a storm, this time within the very minority faction which he had led out the main door of the UBC. In June 1897, with several state Supreme Courts ruling or in process of ruling against the Radical position toward the UBC constitution, and with legal expenses mounting, Wilbur decided to review the account books of the minority Printing Establishment. His father

had given up the job of publishing agent some years ago, and a Rev. M. F. Keiter had taken over responsibility. Perhaps Milton and Wilbur had developed some suspicion about Rev Keiter, or perhaps they were simply interested in determining exact assets of the Radical branch of the UBC. At any rate, Wilbur spotted some irregularities in Keiter's account books which implied the disappearance of $1000 to $3000 of church funds at a time when funds were sorely needed. Wilbur wrote his father about the apparently missing money, and drew one of his characteristically logical and unforgiving conclusions: "He (Keiter) is either a liar, a thief, or an incompetent book keeper, or all three."[16]

The handling of this misappropriation and even the determination of whether any illegality had in fact occurred, occupied a large portion of the Wright family's attention and worry for the next ten years. The issue competed strongly for Wilbur's intellectual and emotional energy all through the years of his and Orville's Kitty Hawk experiments, the post-Kitty Hawk development years at Huffman Prairie outside Dayton in 1904 and 1905, and the business negotiation years of 1906 and 1907. It was a very widely reported scandal, reaching front page status in Chicago newspapers in 1902, and was perhaps more unifying of the Wrights than the 1889 secession because it dragged on longer and was a far clearer example of good versus evil.

The division in the minority faction regarding Keiter shaped up around the issue of disclosure. Bishops Floyd and Barnaby favored an "in house" handling of the matter with perhaps an internal investigation to determine any fraud or embezzlement, and then disciplinary action against Keiter if needed. Milton Wright, on the other hand, angered over what he saw as an attempt to cover up criminal action, and oblivious in his righteousness to the more political concerns of Barnaby and Floyd, advocated notification of civil authorities in

Indiana and public criminal prosecution. He thus unwittingly precipitated his ambivalent opposition into a defense of Keiter and brought down on himself another controversy in which the majority of his minority faction were drawn up against him.

In the General Conference of 1901 (Old Constitution), the nervous bishops and board of trustees declared Keiter's books to be sound and attributed any error to simple miscalculation rather than to malice. Milton and Wilbur then went to work in preparation for the fight which was to attend the annual North Ohio Conference in the summer of 1902. It was during these months that Wilbur and Orville constructed their wind tunnel and gathered the accurate data that would enable them to perfect the 1902 gliding prototype of their eventual motorized Flyer of 1903. In February 1902 Wilbur outlined his thoughts to his father and expressed his sympathy for Milton's unceasing church trouble:

> "... The question of whether officials shall rob the Church, and trustees deceive the Church for fear of injuring collections, must be settled now for all time. In the long run nothing can be gained financially by deceit. To cheat the people by lying reports is more dishonest than Keiter's stealing, and so far as Church interests are concerned, the penalty will be greater. The quicker the matter can be brought to a focus the better it will be.
> ... My chief regret is that the strain and worry which you have borne for fifteen years past shows no sign of being removed. I had hoped... that you could ... spend your remaining years in peace. It would seem however that the fight only increases in intensity."[17]

Prosecution of Keiter through the Indiana state authorities on forgery charges led to his technical acquital in 1902 because the statute of limitations on such charges had expired. It remained, then, for the Wrights to press their case with the church authorities in the 1902 North Ohio Conference of 1902. They were not mild in their attack. Wilbur worked on tracts and pamphlets even as he and Orville camped at Kitty Hawk for their third season, and Wilbur reaffirmed their awareness of safety in gliding ventures by

referring to their involvement in the church struggle. He wrote to his father, "... We will bear in mind your caution to be careful. We have no intention of being disabled while that gang of rascals is still attempting to injure you, and rob the Church ..."[18] In fact, they had very nearly postponed their gliding experiments that summer in the cause of defending their father and attacking Keiter. The upset to home life was felt acutely by Katharine, who worried more than usual about the health and well-being of her men. She wrote to her father in the summer of 1902,

> "We are mighty glad to hear that you are a little better. We only hope that the improvement will keep up. But be sure to be careful of yourself, in every way. Are you getting the right kinds of things to eat?
> That White River Conference is the loveliest mess that I've heard of lately. They are nearly bursting with helpless rage to think that their plans have miscarried so miserably. Will and Orv ... are talking of going (to Kitty Hawk) next Monday, though sometimes Will things he would like to stay and see what happens at Huntington next week. They really ought to get away for a while. Will is thin and nervous and so is Orv. They will be all right when they get down in the sand, where the salt breazes blow, etc. They insist that, if you aren't well enough to stay out on your trip, you must come down with them. They think that life at Kitty Hawk cures all ills, you know ..."[19]

At this time, Milton had been suspended from the Church by action of the 1902 North Ohio Conference, as there was a clear sentiment to solve the embarrassing Keiter problem by getting rid of the strident Wright. It was classic morality warfare, with Right versus Wrong outlined plainly for all to see, except those whose vision was clouded by political interest or anxiety. Such fears were small-minded to the anti-Keiterites, and just before the North Ohio Conference took place, Milton and two of his supporters on the Board of Trustees - William Miller and C.L. Wood - submitted a report of their own investigation of the Keiter affair, and once again Bishop Wright succeeded polarizing his opposition. The report virtually demanded that the majority of the Board of Trustees, which had voted for internal settlement, admit

wrongdoing on the order of conspiracy. The Board, with Bishop Floyd singled out expressly, was accused of "neglect of duty, disobedience to the command of General Conference, and ... encouragement and justification of ... crookedness and insubordination" by Keiter. The wright dissenters demanded that Bishop Floyd "make confession of same", and threatened more public outcry if their demands were not met. The report declared that

> "So long as our Bishop (Floyd) refuses to furnish this conference with such an assurance as above described, we, as a conference, feel obliged to regard him as undutiful, insubordinate, and rebellious against the order of our last General Conference, and ourselves under no obligation to pay him for any service."[20]

In light of this uncompromising and aggressive posture by Milton Wright, it is perhaps not surprising that the Board voted to suspend him. But his children were only spurred into a more vigorous defense of their wronged father. Wrote Wilbur from his wooden shack on the sands of the Outer Banks,

> "... I learn by Conservator that the special committee reported in favor of suspension and that this was adopted by the convention with an amendment giving 60 days of grace. This action was an infamous outrage and when I get back home I will see that the members of the committee who made this finding sign a written retraction."[21]

Katharine offered her support as well:

> "... Isn't that a noble idea of theirs to give you sixty days to confess and so on and so forth! ... Not one of that crowd knows what common honor, honesty, or gratitude means.
> ... You musn't worry over that White River bluff. A good many people have said to me that it was enough to make any decent man or woman indignant. Give me credit for my "zeal" anyway - Pop! We'll all get to work again, when the boys come home and you get home!"[22]

Katharine's support was moral and maternal, while Wilbur's tended to be more active and interventionist. He served very much as supplemental and even principal apologist and "lawyer" for the elderly Milton, while Katharine poured forth encouragements such as the following:

> "... I am afraid that you are getting down-hearted again and I am worried nearly to death over it. Why, Pop - please don't recognize the action of that conference by appealing to the next General Conference, unless you have decided that the conference really was legal. Don't let them bluff you out with their rascality. And if you are able, you ought to attend every one of your conferences this year. It will give them too much satisfaction to see you giving up. The boys will be so disappointed, too. I wish I could relieve you of the worry, some way, but I can't. But don't let them have things all their own way when nearly every one thinks you are right ... If there were anything I could do, I would do it.
> ... Will you tell me in your next letter what kind of a pedal cap the boys asked for. It has slipped my memory. I have sent on the skillet to them. They are having a fine time. They will be careful. Harriet is still here with me or I would die of lonesomeness."[23]

And a week later,

> "... I wish you wouldn't pay any attention to that session of White River .... They have not suspended you, Pop, and you're not going to give up ... We'll never stop fighting now, Pop, until we've shown these rascals up - not if it takes some money for it. We are not going to let this thing go - not by a long chalk. Just wait till the boys are back again, with Will feeling strong again! ... Lorin's are well. I am as well as can be - except I am uneasy on your account. I am so glad that your health is better. Take the very best care of yourself for our sakes as well as your own. Harriet is still with me. She talks some of taking a school but I hope not. I couldn't stay here alone."[24]

The move to oust Bishop Wright from office waxed and waned for the next three years. His diary entry for the final day of 1903, two days after his sons had become the first men ever to fly, was as follows:

> "The past year was full of stirring events. I was serene and happy through it all, though grievedat the folly of many, and the wickedness of not a few. I believed that God would at last vindicate the right."[25]

So dominant was this church trial that Milton makes only the vaguest reference to what was perhaps the greatest technological breakthrough in travel, transport, and warfare in modern times.

He managed to dodge what he considered, and what probably were, unfair attempts by those covering up criminal activity to deprive him of his authority in the Church, and the struggle continued until 1905. In May 1905, Wilbur published a tract defending once again his father's claims and he traveled to

Michigan to deliver it to a General conference. He sat in the hall awaiting the results of an election which would vote his father in or out of office, and thus strengthen or weaken his position vis-a-vis ouster attempt. Scribbling a quick note to Orville on his lap, he described the day's activity:

"Dear Orville,

> The elections were held this afternoon. The victory is complete. The Keiterites are very sore and attempted to delay the election by threats that if things were crowded(?) through, White River, Michigan, E. Illinois, etc. would refuse to receive bishops, pay missionary money, etc., and practically assume a condition of chronic insubordination, but they have cried "Wolf" so long that it fell on deaf ears.
>
> We have agreed to come up on appeal on condition that the General Conference give order that this course shall not be considered as admitting or denying the legality of the sessions of White River in 1902-3-4 while the case is under consideration. If they consent it will come up on appeal. I will probably not be home before Sunday. We have been meeting them more than halfway but things are very (?).
>
> They are now voting for Pub. Board and I discover that our men have mixed the slates for Pub. Board and as a plurality elects we are scared to death for fear that a solid vote on their part will elect the Pub. Board. The agony is intense! They are reading off the ballots which takes a long time. It appears that the Keiterites are not quite solid either. One of their votes is thrown out because it contains 13 names. Great Relief. We win. The strain was something terrific."[26]

The Wright faction managed to win several battles, and in a sense the war as well, but the relative autonomy of the various local Conferences, and notably Keiter's home Conference of White River, Ohio, enabled the brushfires of this power struggle to drag on for many more months. In August 1905 Wilbur published an editorial in the Christian Conservator entitled "Shall White River Destroy Herself?", and the notorious M.F. Keiter was still active as Chairman of the Publishing Committee in the U.B.C. Old Constitution. He remained in this capacity as late as 1907. Milton Wright resigned as Bishop on May 20, 1905, but continued in the role of senior churchman and maintained his fight to rid the U.B.C. of Rev. Keiter. In September, 1907 Milton received indication from some former "Keiterites" that their man was finally out of favor, and that he had succeeded yet again in embezzling more

church money in his role as publishing agent. Peace offers were extended to the retired Bishop Wright, but his children warned him against falling into a "trap" designed to make it look like he was softening his stance against Keiter. Such a trap did not materialize, and a year later Keiter had left the church to continue his financial sleight-of-hand in the Tennessee lumber business. On September 19, 1908, two days after Orville's near-fatal crash at Ft. Meyer, Virginia, and while grandson Milton was recuperating from a month-long seige against typhoid, Bishop Wright wrote to France, where Wilbur was stunning Europe with his flights. The Bishop had just returned from an annual Conference in Greensfork, Indiana where he had picked up the latest news on Keiter:

> "Brother Schroek, delegate from North Grove, where Dr. Keiter resigned to go to his timberland speculation in Tennessee, assured me that the doctor's name is now associated with all that is evil. Abram Landrum's suit against Keiter as a conspirator with a Tennessee land owner to defraud him is still pending. Keiter was playing the role of both agent of the Tennessee landowner and joint purchaser (with Landrum) of his lands! He is said to have got a fee for the sale, while inveigling Landrum as a fellow purchaser! Then he obligated Landrum, as joint purchaser, to pay ten of the twelve thousand dollars the land cost, while he and Landrum became equal joint owners....Keiter's old defenders say as little as possible about their old embezzling friend. I think many do not know Keiter's Tennessee fraud, and most who do know partly, get it in homeopathic doses. Well, that would be in better place in home conversation than in a letter across the sea."[27]

Thus did the long and trying saga of the Wrights versus the Keiterites come to a close. As one might expect, this prolonged strain with all its attendant fighting had a powerful effect on the whole family, and particularly on the core members. The unity of the family, and the devotion of the unmarried children to their beseiged and sole surviving parent, was greatly enhanced. Additionally, their essentially conservative and somewhat mistrustful attitude towards mankind was reinforced both by reality and by the sequence of events that their own rigid righteousness helped create. The inability to

compromise in the face of a moral proposition - and even more importantly, the tendency to interpret political activities in moral terms - was the Keiter legacy for the wright brothers, and helped to shape their behavior with regard to patent suits and the like which came up in the years 1908-1912, and which to some extent their own attitudes towards their invention helped to bring about.

The Wrights' grievances within the U.B.C. for nearly two decades sensitized them to the power of the printed word to attack or support, and to the need for legalistic accuracy in all that they wrote. They also became more sensitized than they perhaps would have wished to the more unpleasant dimensions of man's political instinct. The church struggle reinforced their moral notion of man as an adversarial animal, both in his contacts with his fellow man and in his fight to keep his baser impulses in check. Yet even as it sharpened their defensiveness and their skill in conducting a campaign against their opposition, it simultaneously rigidified their almost unspoken expectation that rightness and accuracy and truth and propriety should and must prevail among people. They were always shocked and angry when they did not, and thus their conservatism was uniquely free of that cynicism which often accompanies the morality of mistrust. There is in some ways a remarkable naivete about the Wrights in their assumption that honesty and decency should, as a matter of course, be expected from others no matter what the stakes in terms of money or fame or power. They expected their just due as they would have given others justice - no more and no less - and they were consistenly hurt and angered when such simple fairness on their part led to outcomes more reflective of all-too-human proclivities for greed and manipulation.

They also tended, perhaps because of the moral climate in which they were raised as well as by the lengthy process of mixing politics and morality in

defense of their father, to confuse morality with other issues less obviously moral, such as business negotiations, defense contracting, or patent claims. As with the Keiter incident, history has proven the Wrights to have been in the right in most of these clashes, but our interest, again, is not so much in vindication but explanation of their righteous trials in so many areas.

THE PRESS OF PUBLICITY

An excellent example of how their politico-moral outlook interacted with human fallacy to produce the characteristic "we-they" family feeling can be found in the history of relations between the Wrights and the Press. In a word, those relations were disastrous. Mutual suspiciousness and hostility were in large part responsible for the fact that nearly five years elapsed between the date of the first flight in December 1903 and the time when most people believed that man had really flown. Such antagonism also explains why the first accurate report of the Wrights' achievements appeared not in a newspaper or in a scientific journal, but in an obscure journal for beekeepers, titled "Gleanings in Bee Culture" (March 1, 1904), printed an article by ~~under the authorship of~~ Amos Root, a Medina, Ohio apiarist with a love for things mechanical who drove his automobile to Huffman Prairie in 1904 to witness the rumored practice flights of the Dayton brothers.

Problems with the press began on the very day of the first flight at Kitty Hawk, when Wilbur and Orville hiked nearly five miles from their beach camp to the weather station to send a telegram home announcing their success. They wished the announcement to the press to come from the Wright home in Dayton, and their expectation seems to have been that fame and fortune - their just due - would flow immediately and naturally from that announcement. The telegraph operator at Kitty Hawk relayed the message on the government wire to Norfolk where it would be picked up by commercial operator and sent on to Dayton:

"Success four flights Thursday morning all against twenty-one-mile wind started from level with engine power alone average speed through air thirty-one miles longest 59 seconds inform press home Christmas. Orville Wright."[28]

The telegram reached Dayton with a couple of minor errors, but not before the Norfolk operator, ignoring the instructions of the Wrights not to do so, gave the news to a reporter, H.P. Moore, of the Norfolk Virginian-Pilot. In order to understand what Moore did with the news and how the press in general reacted to the Wrights, it is necessary to keep in mind the following facts. First, for several years there had been much publicity in the papers of "human flight" stories, mostly of the science fiction or barnyard inventor variety, so that reasonable people were prepared to be skeptical and even derisive toward the subject. Second, human flight in balloons and airships (blimps) was an accomplished fact at the time, and a wealthy Brazilian agricultural heir named Alberto Santos-Dumont had made headlines the whole world over for his blimp flights under propellor power around the Eiffel tower and other Paris sites. Thus the public and the press were prone to regard any flight as another of this type, did not understand or appreciate the notion of "heavier-than-air" flight, and judged the Wrights' achievement by the flamboyant standards of balloonists and blimp pilots. Third, the Langley "Aerodrome", built under the prestigious auspices of the Smithsonian Institution in Washington, D.C. with both Smithsonian and War Department funds, had crashed with fanfare into the Potomac off its ungainly launching houseboat in December, just days before the Wrights' quiet and inexpensive success on the North Carolina shore. An outraged Congressional investigation was more successfully launched under the power of public derision and scandal into such frivolous and unauthorized use of federal dollars, and the press had enjoyed a rare field day in the capital city. Finally, newspapers in those days were far less scrupulous than they are today about digging out "the facts", and while reasonable attention

to the truth applied in matters of politics and other stock news fodder, journalists did not hesitate to exaggerate or even fabricate information about "human interest" stories such as those about flying men.

To his credit, the young reporter Moore tried hard to get more data on the Wright flights, but this proved impossible given the isolation of Kitty Hawk and the Wrights' prohibition on his receiving the telegram in the first place, a prohibition which he had already decided to ignore. Lack of precise information proved not an insurmountable obstacle to a printable story, however, and the December 18 issue of the Virginian-Pilot described a three-mile flight by Wilbur, at the end of which cries of "eureka" pierced the salt air. The "craft" had a large six-bladed propellor beneath it to lift it off the ground, deduced the creative and/or desperate reporter, and one behind to push it forward.

Moore then did a little free-lancing in an effort to sell his story to newspapers elsewhere in the country. Several refused to buy it, having recently indulged in gleeful editorial tirades against the foolishness of Langley's efforts to fly. Some delayed printing, and some buried it on inside pages where embarrassment might be minimized should the story prove to be a hoax. Even the Dayton Journal refused to print the story, and Bishop Wright noted in his diary, with some naivete about the social and public context of his sons' achievement:

> "The (Cincinnati) Enquirer contained flaming headlines on the Wrights' flying. Dayton Journal and Cincinnati Tribune contain nothing! though I furnished press reporter the news..."[29]

By December 20 the Washington Post and the Chicago Record-Herald had printed stories or editorials on the December 17th flights, but since they lacked specific information (the Wrights were withholding this so as not to give away their work to competitors) and pictures, they were forced into using the information supplied by Moore.

~~question, actually, as to whether it was Moore or another Virginia reporter named Ed Dean who intercepted the original wright telegram from Kitty Hawk.)~~

During these first post-success days, the Wright home was in ~~a bit of an~~ minor turmoil ~~uproar~~, as Wilbur and Orville were not yet back from North Carolina and the family, like everyone else, was dependent on the newspapers for information. Kelly reports the home reaction to Orville's telegram from the shore:

> "Carrie Grumbach remembered vividly, forty-five years after the event, what happened when the message was received at 7 Hawthorn Street. As it was late afternoon, already growing dark, she had lighted the gas in the kitchen and was starting to get supper. The doorbell rang and it was a messenger with a telegram for the Bishop. Carrie signed for it and took it upstairs to him. In a little while he came down and said to Carrie, 'Well, they've made a flight." He was always calm and showed no excitement, but he looked pleased. Just then Miss Katharine came home, Carrie remembered, and when she saw the telegram she asked Carrie to delay supper while she took the telegram to her brother Lorin. (Soon afterward Lorin took the message to the office of the Dayton Journal and showed it to the city editor, Frank Tunison, who also represented the Associated Press, but he didn't think a flight of less than a minute worth a news item and seemed annoyed over being bothered about such nonsense...)"[30]

ff Orville wired drily home to Katharine en route to Dayton, "Have survived perilous trip reported in papers. Home tonight."[31] He and Wilbur arrived at 8:00 PM, December 23, and as Milton noted in his diary, "They had some interviewers in the way but suppressed them."[32] ff Publicity was aggressively courting the brothers while ~~and~~ they were as aggressively pursuing their own purpose of having a quiet family Christmas. Magazines such as the Scientific American and Century and even the Women's Home Companion wanted statements, stories, and pictures. The Wrights found that they could neither control the press to their advantage nor could they stem the trend towards fictionalization of their achievement. They therefore issued a statement to the Associated Press wireservice on Jan. 5, 1904 which was printed in many papers, though the first paragraph was omitted from all except the Dayton "Press":

"It had not been our intention to make any detailed public statement con-

cerning the private trials of our power "Flyer" on the 17th of December last; but since the contents of a private telegram, announcing to our folks at home the success of our trials, was dishonestly communicated to the newspapermen at the Norfolk office, and led to the imposition upon the public, by persons who never saw the "Flyer" or its flights, of a fictitious story incorrect in almost every detail; and since this story together with several pretended interviews or statements which were fakes pure and simple, have been very widely disseminated, we feel impelled to make some correction. The real facts were as follows:

On the morning of December 17th, between the hours of 10:30 o'clock and noon, four flights were made, two by Orville and two by Wilbur Wright. The starts were all made from a point on the level sand about two hundred feet west of our camp, which is located a quarter of a mile north of the Kill Devil sand hill, in Dare County, North Carolina. The wind at the time of the flights had a velocity of 27 miles an hour at ten o'clock, and 24 miles an hour at noon, as recorded by the anemometer at the Kitty Hawk Weather Bureau Station....Each time the machine started from the level ground by its own power alone with no assistance from gravity, or any other source whatever. After a run of about 40 feet along a monorail track, which held the machine eight inches from the ground it rose from the track and under the direction of the operator climbed upward on an inclined course till a height of eight or ten feet from the ground was reached, after which the course was kept as near horizontal as the wind gusts and the limited skill of the operator would permit. Into the teeth of a December gale the "Flyer" made its way forward with a speed of ten miles an hour through the air. It had previously been decided that for reasons of personal safety these first trials should be made as close to the ground as possible. The height chosen was scarcely sufficient for maneuvering in so gusty a wind and with no previous acquaintance with the conduct of the machine and its controlling mechanisms. Consequently the first flight was short. The succeeding flights rapidly increased in length and at the fourth trial a flight of fifty-nine seconds was made, in which time the machine flew a little more than a half mile through the air, and a distance of 852 feet over the ground. ...We at once packed our goods and returned home, knowing that the age of the flying machine had come at last.

From the beginning we have employed entirely new principles of control; and as all the experiments have been conducted at our own expense without assistance from any individual or institution, we do not feel ready at present to give out any pictures or detailed description of the machine."[33]

This statement announced, albeit indirectly, the wrights' intention to pursue the flying machine as a business venture. It further established their independence from any sources of help (this angered those who had spent time with them at Kitty Hawk), and blurred the distinction a curious press might have about which of the two brothers had been "the first", the "most important", and the

like. Orville had in fact been the first one to fly successfully, since on December 14 Wilbur, having won a coin toss, had taken off on the very first trial, climbed too steeply, and crashed the machine, necessitating repairs that delayed them until the 17th. On that day Orville had led off (with success) and was followed by Wilbur, then Orville again, and finally Wilbur with the longest flight of the day - the 59 second flight referred to in the press release ~~above~~.

Thus had the Wrights hoped to achieve fame, and now they could pursue fortune. However, They did not ~~however~~ appreciate the extent to which the two might be connected in the public eye, and therefore they felt that the publicity which attended their December success could be somehow turned off at will like tap water when ~~one~~ they ~~is~~ finished with it. ¶ The publicist Wrights ~~almost immediately became again~~ quickly reverted to the privatist Wrights who needed to guard against others' stealing their ideas and beating them to market with a practical machine. Therefore, there were no pictures released to a public hungry for proof, and no acknowledgement that anyone at all had at any point been of any assistance to them. The press was ladled out a thin gruel of generalities, all true but not particularly relevatory, and certainly of no use to any competitors or any other researchers. ¶ Having used the press to lay claim to the title of "First", the Wrights dried up quickly as sources of any further information. Two results followed: one, the press grew resentful of the Wrights' sudden turn towards secrecy and ~~the~~ lapsed back into the only ~~pattern~~ attitude in its repertoire for dealing with the subject of manned flight - skepticism and indifference. After all, there was no proof, and the Wrights offered only their word and the word of some coastal people who might have been paid off. ¶ Second, the Wrights' irritation over press inaccuracies ballooned into an active mistrust and antagonism. Their need for what amounted to "industrial secrecy" in the interest of preserving a monopoly on their

invention was directly opposed not only to their own wish to publicize what they had done but also the press's (and presumably the public's) need for substantive information. And since the press felt little social responsibility for accurate reportage in this traditionally "quack" area, the Wrights' resentment and hostility grew. It has been said that they could have used a good press agent at this time in their work, and perhaps this is so. But they would have made the agent's job very difficult as they were loath to surrender the smallest amount of control over their own affairs. They were in a way surprisingly naive in their calculation of press behavior, ~~especially~~ given ~~the fact~~ that both brothers had at one time printed a newspaper.

There was yet another reason for secrecy at this juncture. It is the simple one that their 1903 Flyer, which had floated so precariously into the wind over relatively short stretches of sand in straight-line flight, was a far cry from a fully developed and tested product. In a country where success generally means commercial success, or where at the least, scientific advance is appreciated in direct proportion to its practical utility, the Kitty Hawk Flyer was pretty tentative stuff. The operator was obliged to lie on his stomach with head jerked upwards uncomfortably to look ahead. The engine was remarkable but probably unreliable in the hands of any but the Wrights. The control system was theoretically complete, but actual handling of the craft in circular and banking flight was something that ~~yet~~ remained to be tried. Launching into strong, high density altitude sea breezes in mid-winter was also easier, if less safe and comfortable, than launching into the thinner, hot air of a Dayton summer.

To the Wrights it had appeared that notoriety would occur in two logical stages. First would come historical and scientific fame with the Dec. 17th triumph. This would be accomplished with a press release, corroborated by witnesses, describing what they had done. The second stage of commercial fame would flow from development of the 1903 Flyer.

But unlike the logical sequence of their inventive work, the Wrights ~~As with many of the interpersonal or social problems facing the Wrights~~, plan for notoriety ~~things here~~ would not pan out quite so rationally or predictably. In a February 1904 edition of the magazine the "Independent", a journalist named D. A. Willey from Baltimore wrote an article, "Experiences of a Flying Man", and printed Wilbur's name as its author. Wilbur was outraged and wrote to the editor:

> "My attention has this day been called to a case of most unmitigated impudence in the Independent of February 4. On page 242 an article was published under my name which I did not write and which I had never seen. The bulk of the article consisted of carelessly arranged or garbled extracts from two addresses, which I delivered before the Western Society of Engineers, and which were published in the Journal of that Society in the issues of December, 1901, and August, 1903. Following this came extracts from two press dispatches which appeared in the daily papers of December 19, 1903 and January 7, 1904. A few sentences from a strange source were interpolated, in which an attempt was made to describe the methods by which the power machine was sustained and propelled. This part was entirely fancifal and untrue. The pictures which accompanied the article were not obtained from us nor were they from any of our photographs.
>
> I have never given to any person permission or encouragement to palm off as an original article extracts from these copyrighted addresses and newspaper dispatches. Neither have I given to the Independent, nor to any one, the least permission or excuse for using my name in the furtherance of such attempted fraud. Nor have I given the faintest permission to attach my name to any article of any kind in any paper, excepting the statement which my brother and I gave to the papers on January 6, 1904. Our attention had previously been called to cases in which conscienceless but enterprising reporters had utilized these addresses as mines from which to draw material for pretended interviews, but it remained for the Independent to serve them in the form of a forged signed article."[34]

Wilbur soon learned ~~the~~ Willey's identity ~~of the real author of the article~~ (through Chanute, who had supplied Willey unwittingly with much of his material), and blasted him personally with a volley of the sort previously reserved for Keiterites:

> "Please do not think that because your collosal impudence was the means of getting you into trouble it will also be the means of getting you out again. If I were in a position where an expose would almost ruin me and was dependent on the forbearance of persons whom I had injured for the suppression of my name in public statements regarding the matter, I think I would try to move them by a show of real penitence rather than by a show of brazen effrontery.
>
> I never in my life wrote you a latter; I never gave you authority to use my name in any way whatever; I never gave you authority to make extended verbatim quotations from my addresses before the Western Society of Engineers which are copyrighted by that Society. Neither has that Society given you

such permission, the Secretary tells me.

The Independent will probably publish a further statement regarding the matter. If not I will. Meantime you can take whichever course you think will profit you best."[35]

The Independent soon published an apology to Wilbur. Wilbur considered filing suit against Willey but decided against it when he realized that the financial return would not be worth the effort. It had not yet sunk in to the honest Wright consciousness that ~~slander~~ exploitation and imposturing would be the partial price of fame ~~and notoriety~~. (insert Gonjales story)

It was important, then, for the Wrights to control the publicity which the press naturally sought, and they wished frankly to shut it off altogether while they worked at Huffman Prairie, also known as Simms Field, in developing their Flyer. This seventy-acre cow pasture was about eight miles from Dayton on the commuter railway to Springfield, Ohio. Orville and Wilbur were permitted free use of the land by Torrence Huffman, a Dayton banker, on condition that they not harm his cows. Simms Station was their stop on the trolley line, and they set up a working shed and hangar on the perimeter of this rough, clumpy pasture, ringed with trees and telegraph lines. (Huffman Prairie is now an almost insignificant piece of well-mowed lawn ~~on the~~ in a corner of ~~the~~ massive ~~runway at~~ Wright-Patterson Air Force Base.)

Realizing that absolute secrecy would be impossible, Wilbur and Orville decided to announce their work at the outset to reporters and allow them to witness a few demonstration flights on condition that no pictures be taken and all printed accounts be reasonably accurate. In the last week of May, 1904, several newspaper men showed up along with many friends of the Wrights. But the winds proved to be too erratic, and after waiting all day the visitors were able to see only how the plane would move down the launching track. It didn't even do that very well, as the engine developed problems and would not fire

smoothly. ¶ The reporters were treated to the rather less-than-impressive sight of the 1904 Flyer driveling down the monorail in explosive fits and spurts, and then falling awkwardly off the end onto the grass. Only a couple of reporters cared to show up to endure any further "demonstrations" later in the week, and these were witness to a short hop with engine trouble of about sixty feet, at the dizzying altitude of about six feet. The whole thing lasted less than ten seconds. ¶ The reporters who had returned were convinced that the Wrights meant well, were serious in their work, and were possibly on the right track, but were not the possessors of any special accomplishment as yet. They lost interest, and from then on the Wrights had little difficulty in keeping the press quiet about the Simms experiments. Indeed, they had great difficulty rousing the press a few years later when the Flyer was a perfected craft capable of hour-long flight in circles and figure-eights, carrying a passenger with an engine that never missed a stroke.

John Evangelist Walsh (a writer) has ~~It has been alleged, or~~ hypothesized 36, that this was a deliberate ~~de-~~ ruse ~~ception~~ masterminded by Wilbur, meant precisely to bore the press into indifference and so get them off the trail. By this account Orville and Wilbur deliberately mishandled the engine and the controls, and misinterpreted wind conditions so as to create the impression that they were indeed not yet "news". ¶ The interpretation that this was a conscious deception is a plausible one, though there is only indirect support for it. On January 8, 1906, Wilbur wrote to Arnold Fordyce, emmissary for the French government in its negotiations to purchase the Flyer,

> "...No doubt an attempt will be made to spy upon us while we are making the trial flight and teaching a French operator, but we have already thought out a plan which we are certain will baffle such efforts as neatly as we fooled the newspapers during the two sessions we were experimenting at Simms."[37]

And over two years later, when Wilbur was finally able to attempt demonstrations in France, he described the secretive night-time transport of the Flyer from

Leon Bollée's automobile factory, ~~where it had been assembled almost singlehandedly by Wilbur in spite of his severely burned arm,~~ to the racecourse at Le Mans, ~~where he would fly:~~

> "...Night before last we folded the front framing back against the machine and set a couple of automobile wheels under the skids of the machine and hitched one wing tip to the rear of an automobile, and ran the whole business down to the racecourse, a distance of about five miles, in about a half hour. We fooled the newspaper men completely. Not one was at hand."[33]

If indeed Wilbur and Orville intended to manipulate the press into indifference, they must have kept their plan very secret, for their father's diary entries at the time reveal nothing of any such plan:

> "Monday, May 23, 1904. It rained early in the morning. Went out to Simms Station to see the brothers attempt to fly. Too little wind. Went and came with Lorin's. Encountered rain on our return.
>
> Wednesday, May 25, 1904. At two-thirty we were at Huffman's farm at Simms Station to see an aeronautical flight, but a rain came up and hindered. Many were disappointed. I went and came with Lorin's.
>
> Thursday, May 26, 1904. Went at 9:00 (on) car to Huffman's farm. At 2:00 Orville flew about 25 feet. I came home on 3:00 car. It rained soon after."[39]

I suspect this was only a half-deception by the brothers, somewhere between the high expectation of being able to show off a flight and the conspiratorial sort of publicity manipulation hypothesized ~~in some accounts~~ by Walsh. They had made significant alterations in the 1904 Flyer and engine, and could not be confident that immediate success would greet their first flights with this new machine. In fact, they were probably assured of problems as they had always encountered unexpected difficulties at every step in their march towards success. In order to preserve their peace and privacy at Simms while working on the development of the new Flyer, they would have to be rid of journalists, and what better, more honest way to do this than expose them to the reality of testing out a new invention? The sensationalists would be looking for sensational results, would be disappointed, and would not come back. The others would report simply the reality that a good deal of work remained to be done, and they too may as well not

return until that work had been accomplished. The main lure for the press, in the Wrights' mind, would be removed - the hope of a fantastic occurrence.

~~Yet one looks in vain for any sign that someone in the closely-knit Wright family group knew anything of such a "plan".~~ It would have been very uncharacteristic of the brothers to expose their family, particularly their aging father, to unnecessary inconvenience, and this is the single strongest argument, in my opinion, against the "deception theory". Moreover, they were trying to prepare for a July 4th aeronautics exposition in St. Louis and had every reason to be sincere in their hope for rapid success. They did not anticipate that it would take two years to perfect the Flyer, and were in fact very chagrined that so many problems were encountered in the 1904 season at Simms. In sum, then, it is likely that they wished to give the press, their family, and their friends a modest performance of perhaps a small, straight-line flight - nothing spectacular, but not a total flop either. In retrospect, a total flop served their needs quite well. ~~In keeping the press at bay, and this may be why Wilbur claimed it as a master-minded kind of scheme.~~

By October 5, the exposition at St. Louis had become a failure, in part because the performance demands for entry were too strict to be met, and also because enthusiasm dwindled when the famous Brazilian airship pilot Santos-Dumont had had his balloon vandalized in storage at St. Louis. When this drawing card withdrew, public interest and private financial sponsorship largely collapsed.

On October 5, Wilbur wrote to Octave Chanute,

> "Up to the present we have been very fortunate in our relations with newspaper reporters, but intelligence of what we are doing is gradually spreading through the neighborhood and we are becoming uneasy about continuing them much longer at our present location. In fact, it is a question whether we are not ready to begin considering what we will do with our baby now that we have it." 40

They continued, nonetheless, into December, and on the first of that month Orville circled the field for nearly five cold but extraordinary minutes. Some

difficulties in engine function, control, and handling remained to be solved, but great progress had also been made. Their launching system of weights and a derrick was tried successfully on September 7, and allowed them some independence from strong headwinds in their launch procedure. Complete circular flight had been achieved on Sep. 20th and was witnessed by Amos Root, the apiarist from Medina Ohio.

Over the Christmas holiday Wilbur and Orville spoke with their congressman, Robert M. Nevin, about selling their invention to the U.S. Government's War Department, and he told them to write him in Washington when Congress reconvened after the recess. On January 18, 1905, they sent him the following:

> "The series of aeronautical experiments upon which we have been engaged for the past five years has ended in the production of a flying machine of a type fitted for practical use. It not only flies through the air at high speed, but it also lands without being wrecked. During the year 1904 one hundred and five flights were made at our experimenting station, on the Huffman prairie, east of the city; and though our experience in handling the machine has been too short to give any high degree of skill, we nevertheless succeeded, toward the end of the season, in making two flights of five minutes each, in which we sailed round and round the field until a distance of about three miles had been covered, at a speed of thirty-five miles an hour. The first of these record flights was made on November 9th, in celebration of the phenomenal political victory of the preceeding day, and the second, on December 1st, in honor of the one hundredth flight of the season. . . .
>
> The numerous flights in straight lines, in circles, and over "S"-shaped courses, in calms and in winds, have made it quite certain that flying has been brought to a point where it can be made of great practical use in various ways, one of which is that of scouting and carrying messages in time of war. If the latter features are of interest to our own government, we should be pleased to take up the matter, either on a basis of providing machines of agreed specification, at a contract price, or of furnishing all the scientific and practical information we have accumulated in these years of experimenting, together with a license to use our patents; thus putting the government in a position to operate on its own account.
>
> If you find it convenient to ascertain whether this is a subject of interest to our own government, it would oblige us greatly, as early information on this point will aid us in making our plans for the future."[41]

Nevin forwarded their letter to the War Department, which replied with a form letter indicating that the Wrights' letter had not been read with any

seriousness and was probably not even believed. This proved to be a portent of things to come. So great was the silence which greeted the Wrights' offer that the press seemed virtually to have forgotten about them entirely. The flurry surrounding December 17, 1903 had long since faded into yesterday's papers. This lack of topical believability - of "newsworthiness" - greatly impeded the marketing of the Flyer, and the general thought seemed to be, "If you indeed have flown in circles for five minutes under perfect control, how come this great news wasn't in all the papers?" The Wrights had spun their own "Catch-22."

In January 1906, the editors of the Scientific American expressed disbelief over the Wrights' claim to have flown:

> "If such sensational and tremendously important experiments are being conducted in a not very remote part of the country, on a subject in which almost everybody feels the most profound interest, is it possible to believe that the enterprising American reporter, who, it is well know, comes down the chimney when the door is locked in his face - even if he has to scale a fifteen-story skyscraper to do so - would not have ascertained all about them and published them broadcast long ago?"[42]

Wilbur responded in a hurt and sarcastic letter to the editor:

> "Your letter of February 3rd and a copy of your paper containing an article entitled 'The Wright Aeroplane and Its Fabled Performance' have been received and read with much amusement. As you profess to have obtained the data of what you term "alleged experiments" direct from a published letter signed by ourselves, and do not discredit the authenticity of the letter, but only the truthfulness of the statements, we are at a loss to understand why you should desire further statements from such a source.
>
> No doubt many of your readers were surprised, in view of the reputation we have long maintained among scientific workers, that you should have found it necessary in publishing the data of our recent experiments to use forms of expression whose humorous side may not have been as apparent to them as it is to us. In their sight it would have had a better appearance if these expressions had been preceded by some evidence of a sincere effort to discover whether such terms were really justified."[43]

I suppose Wilbur's anger was justified. Yet at the same time he seems not to have acknowledged or even realized the negative consequences of the policy of secrecy adopted after Kitty Hawk. Similarly, he seems to have completely ignored the disastrous effect of Samuel Langley's expensive failures on future

federal support for aeronautics. As in the UBC affairs, we see the attitude of righteousness in which all the complexities of human perception and error and political necessity are reduced to a single question, "who is in the right?" Having convinced themselves and several reputable Dayton citizens who witnessed their flights that they were in the right, ~~they~~ felt positively offended that anyone should demand further demonstration of what they claimed. Faith in their personal integrity was expected at this point in their efforts to substitute for ~~empirical investigation~~ demonstrable proof, and skeptics were seen as "doubting Thomas's". Arnold Fordyce described this behavior to a New York Herald reporter in January, 1906:

> "They were certainly the most impossible men I ever saw. They would not even allow me to approach their workshop, and said that most of the reports I had read of their achievements were probably untrue. ...But the most surprising thing occurred when I was about to leave Dayton after the contract had been made (with a group of French financiers - the deal later fell through). One of the brothers drove me to the station and a few minutes before my train arrived he said to me: - 'You know a great deal about this business, and thusfar you have taken everything on faith. Now I am going to show you something that is tangible!' Then he drew from his pocket four photographs showing their airship in various stages of flight, and from these photographs I was convinced that they had really accomplished all that was claimed for them."[44]

Unfortunately, one must take all newspaper accounts of the time with a grain of salt. But even so, this interview captures the essentials of the Wright brothers' attitude. They asked that others have faith in their reason and in their truthfulness, and not demand to see the Flyer in action. They even expected to be able to sell the machine to buyers who would not have had any chance to witness flights - an expectation that eventually gave way in 1908. They were, of course, free to make any demands they wished so as to prevent others from copying their invention, but they miscalculated badly the nature of others' response to their secrecy. They saw in others' disbelief not a vacuum of information, but rather a plot to undo their accomplishment and deny them their just due. It was the UBC all over again.

Their suspicion of others was regrettably confirmed from time to time, as

when a visitor with a camera came to Simms field, declined to reveal his identity and was found later - with proof almost but never quite positive - to be Charles Manly, chief engineer for Samuel Langley at the Smithsonian and pilot of the ill-fated Aerodrome. Nevertheless, only men of absolutely exacting honesty and uprightness could have been so blind to the human need for information that underlay many of the press distortions and so-called "spying". ~~Even~~ Though the Scientific American had retracted its skepticism by December, 1906, stating that

> "In all the history of invention there is probably no parallel to the unostentatious manner in which the Wright Brothers of Dayton, Ohio, ushered into the world their epoch-making invention of the first successful aeroplane flying-machine."[45]

Still, the Wrights never overcame their fundamental hostility towards the press, ~~though~~ They befriended individual reporters and writers who would convey in reliable fashion the story of their technical achievement, but "human interest" stories (I am sure this would have been considered in that category) were kept at arm's length, and this accounts in large part for the present scarcity of biographical material on the Wrights. To the end of his life in 1948, Orville would never say anything of much personal significance to a reporter with a notepad in hand.

The persistence of their mistrust even past the time when inventors' secrecy was relevant suggests that they had felt betrayed and maligned by the press, ~~they expected to be wronged, and they bore a grudge sorely~~. In February 1908 a journalist named George Turner published an article on the Wrights in McClure's magazine. Wilbur objected to the article, and gave his reasons to Chanute, whom Turner had contacted for verification of the material in his article:

"I do not think we have done Mr. Turner injustice in our thoughts of him.

> He is not honest. He pretends to his readers that we said certain things to him, when in reality he borrowed them from addresses five or six years old and the article in the Aero Club book. Then he misrepresents the atmosphere of the real conversation by presenting it as a more or less authorized statement, and as though the subjects taken up were those we chose to present, when in fact they were not intended for publication and were in answer to questions which we could not well evade without rudeness. In some cases he has quoted us as saying things we never said to him or to anyone, as for instance the paragraph saying, "We object to being presented to the world as men acrobats," etc., etc. My quotation is not exact but gives the general idea. We did not say that we objected, nor did we indicate any feeling in the matter at all beyond mere amusement at the blunder. He had no right to put such words into our mouths. It is very much the same all through the article. The objection is not to gross errors in statement of important facts, but to the flavor of misrepresentation which pervades it. It the "fakery" were more apparent I would not be so angry, for gross frauds correct themselves."[46]

At the time, the Wrights were quite angry at Chanute as well for dispensing information without their consent, but they were reluctant to show their feelings directly to him.

In May 1908 when they were practicing for flight trials in France and at Ft. Meyer which would seal the contracts they had painfully negotiated over the previous two years, they were again beset with press exaggeration and, what was worse, denial of the possibility of flight - nearly five years after the first flight had occurred.[47] Fred Kelly, one of the few journalists ever willing to accept the strict conditions for a working relationship with the Wrights ~~(he eventually wrote the only "authorized" biography of the brothers, many years after Wilbur's death)~~, tells in his biography "The Wright Brothers" the tortuous tale of how the press both hit and missed the Wright Story at Kitty Hawk in 1908, when Orville and Wilbur returned to the Carolina shore to prepare for the summer's demonstrations. Highlights include the publication by the Virginian-Pilot of a story of a May 1st ~~wright~~ flight ten miles out over the ocean. Their first flight was in fact on May 6th, was considerably shorter, and over the sand.

Bruce Salley, a free-lance reporter, was sent to Kitty Hawk by the New York Herald to investigate this story and though he missed the first flight, he relayed over the wire-services what witnesses had seen. Kelly writes that

> "The telegraph editor of the Cleveland Leader not only wasn't interested but was indignant that his intelligence should be insulted by the offer of so improbable a tale. He declined to pay the telegraph toll for the short message, even though at the night press rate of only one-third of a cent a word the cost would hardly have been more than a dime. His only reply to Salley was an admonition to "cut the wild-cat stuff"."[47]

When Salley wired back to his own paper, the Herald, the editors decided to send one of their most reliable reporters to investigate further. Other papers had decided the same, and the Herald's Byron Newton found himself in the company of four other reporters at the small hotel "Tranquil House" in Manteo:

> "The newly arrived correspondents, noting the desolate isolation of Kitty Hawk, thought it probable enough that the Wrights must prefer to be let alone. Perhaps, they thought, if intruders came, the Wrights wouldn't fly at all. They decided that if the Wrights were secretive, They themselves would be no less so. They would hide in the pine woods, as near as possible to the Wright camp, and observe with field glasses what happened. That meant a short walk to a wharf on Roanoke Island, five miles by sailing boat to Haman's Bay, across the Sound, and then a walk of a mile or so over the sand to the place where they should secret themselves. They made a dicker with a boatman to take them all back and forth each day and act as their guide. Provided with food and water, field glasses, and cameras, they set out about 4 o'clock each morning from May 11 to May 14 to keep their vigil. Hour after hour they fought mosquitoes and woodticks and sometimes were drenched by rain. But to their astonishment they several times witnessed human flight."[48]

On a couple of occasions reporters would venture into the Wright camp, but they did so with much caution, as though they were violating some unspoken arrangement. The Wrights had what Wilbur jokingly called a "fierce reputation" with reporters. No pictures were allowed and no information was offered. The press was kept literally at "bay" even though the brothers were aware of their presence in the dunes, and, for that matter, flew over them on May 11. They had painted the Flyer a uniform shiny silver, however, to

blur the details of construction should any photographs be taken. On May 14, the practice flights ended when Wilbur crashed the Flyer into the sand, damaging it beyond easy repair.

On May 17, Wilbur and Orville left Kitty Hawk for Manteo, prior to separating into their dual missions - Wilbur to New York and then to France, and Orville to Washington to survey the field at Ft. Meyer, ~~then on to Dayton.~~ While in Manteo Wilbur checked the guest register at Tranquil House for a listing of all reporters who had stayed there, and he noted their names and newspapers in his diary. From New York he wrote Orville:

> "It seems we had the newspaper men thoroughly convinced that if they attempted to approach at all closely that we would not fly. It is a good thing sometimes to have a fierce reputation, like a school teacher.... About a dozen reporters and members of the Aero Club have been beseiging Flint and Co. (The Wrights' business agent in Europe) today trying to find me but I am supposed to have left yesterday."[49]

Orville, ~~generally more sociable than Wilbur,~~ tried to soften their fierceness in a June 8 letter to the genial Byron Newton, who had sent them copies of his Herald articles and congratulations on their success:

> "... I am only sorry that you did not come over to see us at our camp. The display of a white flag would have disposed of the rifles and shotguns with which the machine is reported to have been guarded."[50]

There ~~is~~ was a final ingredient in the formula for the Wrights' disastrous press relations, ~~and it does~~ which did not involve directly either the brothers or the journalists who alternately bedevilled or befriended them. ~~It is~~ The mass cognitive inertia of the public ~~which~~ proved in the long run to be the single biggest obstacle to the acceptance of the reality of powered flight. Editors sought either to overcome the inertia by sensationalizing and appealing to the wish to deride, or they caved in to it by refusing to challenge the public consensus that man would not fly until, in the words of the Puck humorist on October 19, 1904, "I can get the laws of gravity repealed."[51]

With some exceptions, such as Amos Root, few people on the trolley line to Springfield or in the greater Dayton area paid much attention to the flights at Huffman Prairie. Even the managing editor of the Dayton Journal, Luther Beard, completely failed to comprehend the significance of what he knew about the Wrights' work. He would often find himself in the same railroad car with Wilbur and Orville on their way back to Dayton in the evening after a day's flying:

> "... neither the Wrights nor Beard was likely to bring up the subject of aviation. The Wrights showed no eagerness to talk about what they were doing, and Beard kept to subjects he considered more sensible. But one day, in the autumn of 1904, several of the school children told him they had seen the Wrights flying all around the field. Maybe, thought Beard, that might make a little local item for the paper. When he next saw Orville Wright on the car, a day or two afterward, Beard asked him if it was true that they had been flying all the way around the field.
>
> Oh yes, Orville admitted, they often did that. Then Orville began to talk about something else.
>
> Evidently, Beard decided, that fact that an airplane could be flown under perfect control in circles didn't amount to anything after all. Orville Wright himself didn't seem to think it was unusual or important. There was no use putting it in the paper.
>
> .... However, Beard said to Orville, as they rode along on the car: "If you ever do something unusual be sure and let us know." From time to time he went or telephoned to the Wright home to find out if by remote chance the brothers had done anything worth mentioning. "Done anything of special interest lately?", he asked Orville Wright one evening. "Oh, nothing much," replied Orville. "Today one of us flew for nearly five minutes." "Where did you go?", asked Beard. "Around the field." "Oh! Just around the field. I see. Well, we'll keep in touch with you."[52]

As late as 1908, when reports had gone out to America and European capitals about the Kitty Hawk flights of that spring, skepticism and inertia proved insurmountable in many quarters. Byron Newton sent an article on the Wrights to a leading magazine some weeks after his eyewitnessing of the Flyer while squatting in the dunes. The editor sent it back, saying "While your manuscript has been read with much interest, it does not seem to qualify

either as fact or as fiction." [53]

There was ample reason, in fact, for the public to be skeptical about reports of flying machines. For decades, dozens of barnyard-built contraptions had been making the rounds of ~~such intellectually distinguished institutions as~~ side-shows and carnivals, and the idea had an appeal something like the star-ships of today's space fantasies, ~~only the latter are considered as more likely to occur.~~ As early as 1834 a steamboat worker and amateur inventor named A.A. Mason offered for public viewing in a Cincinnati exhibition hall his "Aerial Steamboat" which he claimed could launch him into the skies. Covered with silken wings and other flimsy material, the 10-foot steamboat was to be lifted into the air by a set of helicopter blades, and then propelled forward from the rear, powered by a small steam engine.[54] The design may have been the prototype of others, as it surfaced in the concoction offered by the Virginian-Pilot nearly seventy years later, on December 18, 1903. No one ever took such inventions seriously, and the public had no reason to believe that the Wrights' doings had been any more worthy of belief.

Similar "aerial steamcarriages" were constructed and sometimes tested in Europe in the mid-nineteenth century, and since none of them ever worked even by the most charitable of standards, the notion of flight was discredited at the outset. These early inventors such as William Henson and John Stringfellow in England, Hiram Maxim (inventor of the machine gun) in the 1890's in England, and Clement Ader at the same time in France, set the stage for future interest in aeronautics on the part of accomplished engineers, but unfortunately their concept of a flying machine as a winged locomotive or boat which might be forced into the air given sufficient brute power was doomed. Samual Langley's Aerodrome was the sad culmination of this line of experimentation, which concentrated on a power plant to the detriment of

sound aerodynamic design. Grafting wings onto familiar modes of transport or power was an idea as old and as ill-fated as Icarus, but its anthropomorphic appeal dominated the popular mind even in the Wright era after Orville and Wilbur had capped successfully the alternate tradition of experimentation - that of gliding flight - traced through Otto and Gustav Lilienthal in Germany during the 1890's, Octave Chanute and A.M. Herring in the U.S., Percy Pilcher, Lilienthal's British protege, and Francis Wenham, also in England, and earlier thinkers such Penaud in France, who committed suicide at a young age, and Sir George Cayley in Britain around 1800.

The idea was that man should not attach wings to himself, but rather attach himself to wings - to climb out of the familiar carriage or boat or body or balloon, to cast aside his erect or seated posture, and to make himself fit the body of aerodynamic fact in nature, rather than custom building these facts to suit preconceived ideas or conveniences. No gliding experimenter had ever lain prone upon a wing surface until Wilbur Wright designed his glider in 1900. Lilienthal had stood up in his glider and threw his legs from side to side to correct for lateral imbalance in the wind. Octave Chanute and Augustus Herring also recommended the standing or seated position in their experiments at Dunes Park on Lake Michigan in the mid 1890's. Chanute warned Wilbur against the prone position, but the latter argued in an article "The Horizontal Position During Gliding Flight":

> "The late Herr Lilienthal was convinced that the upright position of the operator constituted the essential factor of safety in flight, and Chanute, Pilcher, and others have agreed with him. His thought was that this position made landing easier; but if the probability exists that this position results in less control of the machine in the air, it may be that more is lost by it than is gained. It is more important to prevent disastrous crashes than to mitigate somewhat their violence .... The horizontal position requires assistance for the launching, but once the machine is in the air, it travels more steadily and its turning motions are slower, the operator's body now being a part of the machine, and its inertia accordingly greater."[55]

To take the position of the bird rather than the man - to be, if you

will, more ornithocentric than anthropocentric - this was the major cognitive shift which distinguished the Wrights from all previous experimenters. Yet the Wrights in their technical objectivity seem never to have appreciated that this shift was more than just good engineering sense. It demanded a lot from people who did not share their ~~practical~~ educated perspective on the matter. Most people, ~~even well-educated people~~, simply had no conceptual precedent for the phenomenon of manned, heavier-than-air flight. For that matter, one would not lose money on a wager that the majority of present day passengers on a 747 jet have no idea how the plane rises into the air, turns to the left or right, banks, or descends. They accept flight not because they understand it but because it is an obvious daily fact for which they are sure someone somewhere has the correct explanation. Wilbur and Orville expected the press, and through it the public, to accept the reality of flight when it was neither understood nor demonstrable. This was simply too much to ask. The complexities of human communication and credibility were reduced to the question of right and wrong. With the Wrights firmly on the side of truth, all others become agents of mistruth and were treated accordingly as unfriendly forces. Only Orville seems to have had some insight into this family trait, but he deferred, as was his habit, to the persuasions of his older brother in matters of publicity. He wrote humorously to a friend, George Spratt of Coatesville, Pennsylvania, about their new propeller discoveries in 1903, prior to the final success:

> "... We had been unable to find anything of value in any of the works to which we had access, so that we worked out a theory of our own on the subject, and soon discovered, as we usually do, that all the propellers built heretofore are <u>all wrong</u>, and then built a pair of propellers 8 1/8 ft. in diameter, based on our theory, which are <u>all right</u>! (til we have a chance to test them down at Kitty Hawk and find out differently.) Isn't it astonishing that all these secrets have been preserved for so many years just so that we could discover them!" 56

Even here, Orville's insight concerned the intellectual style of the Wrights. He did not perceive the same dynamic operating on the moral plane as well.

There are, it appears, accepted ways of establishing truth and fact in society. It is not enough to be correct or accurate or right, as Orville and Wilbur so painfully and consistently failed to grasp. One has to go through "channels", to be accepted by such arbiters of the public consciousness as government, press, and scientific/educational associations before receiving the stamp of approval for new ideas. The idea as well as the product needs to be "marketed". The Wrights thought they were marketing an airplane - revolutionary, but nothing more than a technical breakthrough, and that was the core of their miscalculation. They did not realize, mostly because they themselves did not think in such terms, that they were marketing a concept - human flight - and that this demanded cognitive shifts that most people were not prepared to make. This conceptual revolution required that the common understanding of the laws of gravity would have to be reinterpreted, as in the Puck joke about repealing them. The idea that man should fly was used as a metaphor for the impossible, just as flying to the moon was in our day until Neil Armstrong repealed another ages-old law in the summer of 1969.

The Wrights' faith in intellect, with their assumption that everyone else should be equally logical and methodical, combined with their fear of being exploited and undone by the "Keiterites" of aeronautics to create a conceptual stalemate which lasted nearly five years. The stalemate itself nearly undid them, as others were profiting from their experience and their research in spite of their secrecy.

FRIENDS OR FOES

The defensive insularity of the Wrights, particularly after the 1903 Kitty Hawk triumph ushered in the era of probable fame and fortune, tended

to polarize their relationships with others along a "friend or foe" continuum. Two persons especially were well-liked and befriended by the Wrights in 1900-1901, yet both friends grew increasingly alienated over the next decade as the brothers circled the wagons around their achievement. The fault lay not entirely with Orville and Wilbur, however. Many persons, including their good friends, had worked long and hard at considerable personal sacrifice to solve the problem of manned flight and they were naturally prone towards a certain jealousy in claiming a portion of the glory from the Wrights, who had been "first" over the finish line by an almost awkwardly large margin. George A. Spratt and Octave Chanute were two such friends.

Spratt was the slightly-built son of a Coatesville, Pennsylvania physician, also named George. The junior Spratt had received some medical training but had not pursued his father's profession due to "ill health". He lived under the dark cloud of his father's disapproval and made a living managing the family farm in Coatesville. Spratt was in many ways typical of the "dreamer" school of flight enthusiasts. Brilliant but rambling and sometimes incoherent in his theoretical formulations, Spratt fashioned machines in haylofts and yards, and managed in his isolation to convince himself that they were possessed of the secret of the ages. Yet Spratt was more than this and eventually grew beyond the limits of his own roots and genre, nourished by contact with the kind and fatherly Octave Chanute, and bolstered by the example of the small-town bicycle-makers from mid-Ohio. Spratt was propped up and fueled by the increasingly sophisticated American aeronautical community at the turn of the century, and propelled forward in fits and spurts by an exceptionally strong need for the acceptance and approval of others.

In 1896 at the age of 26, Spratt became captivated by the notion of

flight. He was perhaps inspired, as were Wilbur and Orville, by the stories and pictures of the "German birdman" Lilienthal, and by this pioneer's last words as he lay dying with a broken neck after a gliding accident - "Sacrifices must be made".

Spratt began some theoretical investigations into the lifting characteristics of curved surfaces and wrote away for literature on the subject. This brought him into contact with the elderly Octave Chanute, whose "Progress in Flying Machines, published in 1894, had placed him in the position of world's leading authority on the state of aeronautical investigation and theory. This encyclopedic book was a summary of the history of aviation research, published originally in the years 1891-1893 as a series of installments in the "Railroad and Engineering Journal", and had established Chanute as a one-man clearinghouse for information on the subject. Chanute took his role with missionary seriousness and intended to participate fully in the conquest of the air, which he felt to be imminent. For that reason he encouraged several young experimenters, including the Wrights, almost regardless of the direction of their research, as he hoped to shape their thinking into an extension of his own. Therefore he was receptive to the germs of insight arriving at his Chicago home in the mail from a small Coatesville farm.

The germs of neurosis were also evident in Spratt's letters to Chanute, but the older man was not particularly put off. He was accustomed to the temperamental and sometimes idiosyncratic personalities of young men risking their funds, their reputations, and sometimes their lives in this still ridiculed pursuit. (The Wright brothers were a stolid exception to this pattern of temperament.) Chanute offered to Spratt, as to others, his time, encouragement, advice, and even his own money.

Spratt wrote to Chanute in August, 1899, nearly a year before Wilbur would

do likewise, explaining his interests, fears, and ambitions:

> "...This is a remarkably interesting study. I do not see why people hold it so in ridicule. It will come out on top of all methods of transportation in time I believe, and I also believe that the mere accomplishment of transporting a man by this means under favorable conditions to be simpler than generally accepted even amongst experimenters. If a buzzard can lay on the wind with 1 ft. per lb. why can't I?
>
> I find it policy to keep pretty quiet on the subject. The fact is you are the only one I communicate with that I don't feel as though I were putting myself up to be ridiculed. I know of no one around here who has more than a mild degree of curiosity about what I think. Flying has been the dream of my life. I never scared a bird up or watched it cross a valley, but what I longed to go with it and envied it. ..." 57

Spratt's expressed insecurities and humble self-doubts had a way of eliciting warm support from others. Chanute consoled him on one occasion,

> "I have your letter of 4th and instead of feeling that you 'haven't accomplished anything yet', because your own experiments have been anticipated, I think that you ought to be greatly encouraged that you have in one year placed yourself abreast with the men who are studying the subject most earnestly."58

In the Spring of 1900 Wilbur wrote to Chanute for advice on a good location for gliding experiments. This may have been more of an excuse to contact Chanute than a simple request for information, since Wilbur had already sent for information from government agencies. Chanute's suggestions did not much influence the Wrights' choice of a sight, and in the Fall of 1900 they spent their first season on the Outer Banks. In November Wilbur summarized their results in a letter to Chanute and corresponded with him regularly over the next several months in a very practical vein about the use of wind measuring instruments and the like. In June, 1901 Chanute met the Wrights for the first time when he passed through Dayton on a trip east, and after making their acquaintance he proposed that a younger protege of his, Edward Huffaker, and a Mr. George Spratt - "the young man in Pennsylvania who is anxious to see experiments"59 - join the Wrights in their 1901 season at Kitty Hawk. It is possible that Chanute thought Spratt's medical knowledge might prove useful in the event of an

accident (Chanute had brought a physician to his own gliding trials near Lake Michigan in 1896)[60] but in Spratt's case this was probably more of a rationalization than a reason for his presence. Chanute was a large-hearted man who no doubt felt that Spratt would benefit from the experience.

Wilbur and Orville did not want and did not need any assistance at Kitty Hawk, but they deferred to Chanute's wishes out of politeness and a bit of self interest. It would be to some degree of mutual benefit for Chanute and the Wrights to get along with each other - Chanute wanted some gliders of his own design tested by younger men (this, though, the Wrights never did), and the Wrights wished to have the prestigious Chanute witness and attest to their progress.

In early July, as the time for departure to Kitty Hawk drew near, Spratt had second thoughts about leaving his farm. Chanute offered to defray his expenses, but Spratt remained torn between the responsibilities and obligations to his father's farm and his own desire to pursue aeronautics. He found farm work hard - "not too much but too hard"[61] - and feared his father's censure if he should fail to manage his duties effectively.

Nevertheless, with Chanute's financial and psychological support offsetting his doubts, Spratt arrived in camp at Kitty Hawk on July 25, a week after Huffaker and two weeks after the Wrights. On August 4 Chanute himself arrived and stayed for a week in spite of infestations of mosquitoes which had driven the campers to distraction. Orville described the primitive conditions to Katharine:

> "...Mr. Huffaker arrived Thursday afternoon, and with him a swarm of mosquitoes which came in a mighty cloud, almost darkening the sun. This was the beginning of the most miserable existence I had ever passed through. The agonies of typhoid fever and its attending starvation are as nothing in comparison. But there was no escape. The sand and grass and trees and hills and everything was fairly covered with them. They chewed us clear through our underwear and socks. Lumps began swelling up all over my body like hen's eggs. We attempted to escape by going to bed, which we did at a little after five o'clock. We put our cots out under the awnings and wrapped up in our blankets with only our noses protruding

from the folds, thus exposing the least possible surface to attack. Alas! Here nature's complicity in the conspiracy against us became evident. The wind, which until now had been blowing over twenty miles an hour, dropped off entirely. Our blankets then became unbearable. The perspiration would roll off us in torrents. We would partly uncover and the mosquitoes would swoop down upon us in vast multitudes. We would make a few desperate and vain slaps, and again retire behind our blankets. Misery! Misery! The half can never be told. We passed the next ten hours in a state of hopeless desperation. Morning brought a little better condition, and we attempted on several occasions to begin work on our machine, but all attempts had to be abandoned. We now thought that surely our enemy had done its worst, and we could hope for something better soon. Alas, "how seldom do our dreams come true".

The next night we constructed mosquito frames and nets over our cots, thinking in our childish error we could fix the bloody beasts. We put our cots out on the sand twenty or thirty feet from the tent and house, and crawled in under the netting and bedclothes, Glen Osborn fashion, and lay there on our backs smiling at the way in which we had got the best of them. The tops of the canopies were covered with mosquitoes until there was hardly standing room for another one; the buzzing was like the buzzing of a mighty buzz saw. But what was our astonishment when in a few minutes we heard a terrific slap and a cry from Mr. Huffaker, announcing that the enemy had gained the outer works and he was engaged in a hand-to-hand conflict with them. All our forces were put to complete route. In our desperate attacks on the advancing foe our fortifications were almost entirely torn down, and in desperation, we fled from them, rushing all about the sand for several hundred feet around trying to find some place of safety. But it was of no use. We again took refuge in our blankets with the same results as in the previous night. Affairs had now become so desperate that it began to look as if camp would have to be abandoned or we would perish in the attempt to maintain it.

Hope springs eternal; that is, it does the next morning when we begin to recover from the attack of the night before. Remembering the claim of the U.S. Army that safety is in "a superior fire", we proceeded to build big fires about camp, dragging in old tree stumps which are scattered about over the sands at about a quarter mile from camp, and keeping up such a smoke that the enemy could not find us. Mr. Spratt, after getting in bed with the smoke blowing over him, before long announced that he could no longer stand the fire, and dragged his cot out into the clean air. A few minutes later he returned, saying the mosquitoes were worse than the smoke. We spent the balance of the night in retreat from mosquito to smoke and from smoke to mosquito. However, the mosquitoes this night were small in number as compared with any previous night or even our fires would probably have been of no avail. Mr. Huffaker, Will, and I passed the night in comparative comfort, but Mr. Spratt in the morning announced that that was the most miserable night he had ever passed through. Of course, we explained to him what we had gone through, and that we were expecting a repetition of it every night. We nearly scared him off after the first night, but as every night since affairs have been improving, he is now a little less uneasy, and has hopes of enduring the agony a few weeks longer.

Yesterday most of the mosquitoes had disappeared and we had a fine day and

wind for testing the new machine...." [62]

During the weeks in close quarters, Huffaker proved to be more of a moralist than a researcher, or so it seemed to Wilbur and Orville. His manner was careless, in spite of his verbal exhortations that all on the beach should strengthen their characters as a result of their hardships. To the dismay of the fastidious Wrights, he rarely changed his clothes while he was in camp. And what was perhaps more grating, he "had an unfortunate habit of laying stop watches and anemometers uncovered upon the drifting sand, and using a light camera as a stool."[63] His personal habits were of notoriously long standing, going back to his days with Langley at the Smithsonian in 1894:

> "Accustomed to inspecting Smithsonian facilities clad in a morning coat and striped pants, Langley walked past Huffaker's office one morning only to find him sitting without coat or tie, his feet propped up on the desk. A tin-can spittoon nailed to the wall had obviously been put to good use. The prim, exasperated secretary turned to his friend Cyrus Adler, the Smithsonian librarian, and remarked that he supposed so valuable a man as Huffaker would have to be accepted "as God made him."[64]

Wilbur and Orville were not so nearly impressed by Huffaker's talents, but they found Spratt to be a welcome contrast and a lively addition to the camp. He was a genial, somewhat self-effacing man, eager to fit in and to please, sensitive enough not to push or offend. He saw the Wrights' reaction to Huffaker, and aligned himself accordingly. Later he would refer to Huffaker in his letters to Wilbur in ways implying that he (Spratt) and the Wrights shared the same tastes, opinions, values, etc. at least on that one matter. Wilbur's derision of Huffaker as a "character builder" rather than a craftsman was echoed by Spratt, as was Wilbur's sarcastic comment about how one of his blankets had walked away with Huffaker when he left camp:

"....When we came to pack up I made the unpleasant discovery that one of my blankets that had lived with me for years on terms of closest intimacy, even sharing my bed, had abandoned me for another, and had even departed without a word of warning or farewell. Although I regreted to part with it, yet I felt happy in the thought that its morals were safe, as it was in the company of one who made "character building" rather than hard labor the great aim in life! Mr. Huffaker left Sunday. He looked rather sheepish on departure, which I attributed at the time to the fact that he was still wearing the same shirt he put on the week after his arrival in camp. Well, some things are rather more amusing to think over than to endure at the time..."[65]

Spratt shared Wilbur's sense of humor, or modeled it closely. When he left Kitty Hawk in August he took a swim off the boat crossing Albemarle Sound and forgot to take his glasses off. They sank beyond recovery to the bottom, but Spratt joked to Wilbur that this was better than having them stolen because at least he knew where they were.

In spite of his self-doubts Spratt was a bright aeronautical theorizer, and he impressed the Wrights with his general fund of knowledge as well. He knew a great deal about the animals and flora on the Outer Banks and was apparently something of an amateur naturalist. He was able to entertain the group in camp with funny stories and anecdotes - a valued talent in so isolated a spot, and under such trying conditions. His utter inoffensiveness alone was vastly appreciated. He came increasingly to admire the Wrights, and they to feel warm towards him. He saw in them the ideals of energy, independence, ambition, and confidence that he felt he lacked. He looked to them for guidance in his theorizing, and as time went on, in other areas of his life as well. His dependency was evident as he left camp, when Huffaker asked him to leave Chanute's camera, which the latter had entrusted to Spratt, with Huffaker rather than take it back to Coatesville. Aware no doubt of Huffaker's disregard for fine equipment, Spratt asked the Wrights for their advice, kept the camera, and then wrote to Chanute hoping he had done the right thing. As it turned out, Chanute had wished for Huffaker to keep the camera to take pictures of the Wrights' glides.

Yet for all his agreeableness, amiability, and dependency, George Spratt was nurturing a growing envy of the Wrights and what they had been able to accomplish. He was exposed in the Kitty Hawk weeks of July and August 1901 to their confrontative style of arguing points of theory or design. A retiring and sensitive man, he shrunk in awe and perhaps even in some fear of their forcefulness in debate. In fact, friends of the Wrights often commented that when Orville and Wilbur got going on a point of contention, the din was enough to convince all but those who knew them very well that a major battle was taking place. Witnesses to these arguments would then be surprised when, minutes later, the brothers would go at it again, this time each taking the side that the other had previously espoused. As one might suspect (the Wrights did not) Spratt's envy contained a core of anger and resentment that others should be progressing while he was chained to his farm. Wilbur in particular, as the apparently dominant and older member of the team, drew Spratt's attention. Spratt developed with Wilbur the sort of relationship he seems to have had with his father, the doctor, and with Chanute. That is, on the one hand he assiduously courted approval and acceptance, while on the other hand he nurtured a hidden grudge that he should have to do so in the first place, and not be taken simply on his merits. It was a no-win, neurotic set-up for Wilbur and he fell right into it.

Spratt's envy was not all that obvious in the early days of his relationship with the Wrights. It took the form of depressive complaining about his lack of ability and the constraints on his experiments, and it was masked by his hero worship of the Wrights, especially Wilbur. He wrote in January, 1902:

> "Dear Friend,
>
> ...It seems your ambition and ability to do much in short time goes ahead of my possession of these qualities. Your letter gave me the blues at first, it seemed that I had used my time without being indolent in planning and work and here you had planned and worked, what did you make your surfaces out of?"[66]

Spratt often ran his sentences together as if unconsciously fouling his own coherence, but Wilbur responded to the theme with some decidedly "big brother" advice to the 31 year-old Spratt:

> "... I see from your remark about the "blues" that you still retain the habit of letting the opinions of others influence you too much. We thought we had partly cured of this at Kitty Hawk. It is well for a man to be able to see the merits of others and the weaknesses of himself, but if carried too far it is as bad, or even worse, than seeing only his own merits and others weaknesses. In the present case there was no occasion for your "blueness" except in your own imagination. Such is usually the case..."[67]

Wilbur assumed the status of a "senior advisor" to Spratt in things both aeronautic and psychologic. They exchanged considerable correspondence, mostly regarding Spratt's theories of lift and center-of-pressure travel on wing surfaces. The communications were generally quite one-sided, with Spratt bursting enthusiastically over his latest conclusions while Wilbur commented both critically and encouragingly. This pattern was to backfire in later years, as Spratt interpreted all his prior correspondence with Wilbur as his having helped Wilbur by providing him with valuable information on the lifting properties of airfoils. The reverse, if anything, was closer to reality, but the needy Spratt could not relax his intense psychological need to justify aeronautics - the study which so many people held up to ridicule. Just days after receiving Wilbur's words of counsel on weaknesses and merits in addition to several samples of model airfoils Wilbur had enclosed for Spratt's use, he wrote back to Dayton:

> "... There are many things I learned that I believe are and always will be of a real and practical value while with you at Kitty Hawk and the lesson of independent thinking and holding my opinion, that you so pleasantly and willingly rubbed into me I can assure you is still remembered, but you see this experimenting is my business and I can't afford to let it suffer - I need the income to buy food and clothing with, and when another fellow does what I try to do and can't I naturally want to know how he did it..."[68]

Spratt tried with Chanute's help to get funding from the Smithosonian in early 1902, but he was unsuccessful. At no time did he ever gain income from his aeronautical work during those years - except the small supportive sums sent occasionally by Chanute - and he was never in the work as a "business" around that time. Indeed, no such business then existed, except as a metaphor that Spratt "meant business" when it came to the subject of flying.

As the 1902 Kitty Hawk season approached, Spratt was again unsure that he would be able to join his friends at the shore. "Father is just starting the building of a house on the farm," he wrote Wilbur, "and expects me to look after this work along with the farming, and I am going to occupy this house before winter sets in, and so I have an additional interest in the work."[69] Spratt did not mention that he was getting married, but Wilbur divined the truth between the lines of his letters and so informed Chanute:

> "I had a letter from Mr. Spratt a few days ago saying that he hopes to make us a visit while we are in camp. He likewise in a most innocent manner remarks that he is at work on a new house on the farm which he expects to occupy before winter! He further announces that he expects to have more time than ever for aeronautical work, from all of which I am led to infer that Spratt is not so slow, and that the young lady probably has some property."[70]

On August 25, 1902, Orville and Wilbur left Dayton for their third season on the Carolina dunes. As was their routine by now, they took the train to Norfolk Virginia, and from there to Elizabeth City, N.C. where they arranged for shipment of their heavier freight to Kitty Hawk. They then boarded Capt. Midgett's "Lou Willis" after a night's sleep in Elizabeth City, floated down river to the Sound and anchored for the night, sleeping in the open air on the ship's deck. The next day, August 28, they reached Dosher's Wharf at Kitty Hawk and boarded a smaller boat belonging to Dan Tate which would take them north on Albermarle Sound about 4 miles to their campsite at Kill Devil Hills. Over a week later their wooden sheds for living quarters and "hangar" for the

glider were tarpapered and sturdy, and they began work on constructing their new machine. On September 9 they received a letter from Spratt:

> "Dear Fellows,
>
> There you are down there on the sands and here I am, going to the farm early in the morning coming home late at night ang going right to bed. I begin to fear I will not be with you, although I would very much like to be and that doesn't half express it..."[71]

A week later Wilbur took some time to "sell" Spratt on the idea of coming down to Kitty Hawk. He wrote of far fewer mosquitoes than the previous year, improved kitchen and sleeping quarters, a more adequate well for drinking water, and no Huffaker. But above all he was proud of the new glider - "an immense improvement over our last year's machine"[72] - for in this season the Wrights would finally unlock the secret to full, three-dimensional control in the air.

Chanute was to be in camp again this year as well, and under his sponsorship an Augustus Moore Herring would join the group to test some gliders of his own and Chanute's design. Herring was a 37 year-old engineer with an erratic career and a personality to match. He had attended Stevens Institute of Technology in New York but never graduated with his class of 1888. He claimed in later years that his thesis on aeronautics was rejected as too visionary, but

> "Faculty minutes on Herring's case indicate that he was unable to complete the work in mathematics, analytical chemistry, and drafting. The undergraduate thesis, which he simply did not submit, did not deal with aeronautics, but was a design study for a marine steam engine."[73]

In spite of this record, Herring made a modest living as a consulting engineer and in his spare time constructed a couple of Lilienthal-type gliders in the early 1890's, newspaper reports of which brought him to the attention of Octave Chanute. During the 1890's Herring was involved in glider experimentation and construction, always at others' financial expense, and he was also

employed for several months in 1894 and 1895 by Samuel Langley at the Smithsonian, before personality clashes with the imperious Secretary drove him to resign.

If Spratt was from the "dreamer" or "visionary" school, Herring was of the "hustler" school. While not without talent and promise (his 1896 glides with Chanute near Lake Michigan's south shore were quite successful), he was something of a con man whose bluster and self-interest isolated him at just those moments when others' cooperation might have saved his efforts. In many ways, his ego provided too much thrust for the fragile structure of his actual accomplishment. As years went by, the Wrights would discover some of this quality in Spratt too, but it was immediately apparent in Herring who, like Huffaker, failed to win their friendship.

On October 1st Spratt stepped off the "Lou Willis" at Dosher's Wharf, and joined Wilbur, Orville, and Lorin, who had come down on vacation the previous day with Katharine's high hopes for his total refreshment. Spratt and Lorin hit it off immediately and went fishing together on the 3rd, to Orville's amusement "spending the whole morning in catching enough crabs for bait for a short time's fishing in the afternoon. They returned about 4 o'clock P.M. with an eel amd a few small chubs and robins, and a good deal of sunburn."[74]

Two days later on October 5, Chanute and Herring arrived in the middle of a rainstorm, and the whole party stayed up late 'til 10 PM arguing points of aeronautics. In such company one can imagine poor Spratt bursting with his ideas, convinced of their correctness yet fearing to engage in the verbal combat, and then retreating in quiet self-doubt and envy.

On the 13th Lorin left for home and Chanute and Herring sailed the next day, leaving only Will, Orville, and Spratt in camp. Herring went immediately to Washington where he hoped to capitalize on Langley's curiosity about the

Wrights' work by trading information for some form of support from the Smithsonian. Langley refused to see him, not, as the Wrights always preferred to think, because he was an extraordinarily principled man, but because he simply couldn't stand Herring. Spratt left on the 20th, and on the 23rd of October, 1902, Orville wrote Katharine:

> "...Everybody is out of camp but Will and myself. Spratt left Monday. We had a good time last week after Chanute and Herring left. The work about camp was so much easier, beside the fact that the fewer in camp the more there is for each one to eat, and that we had lots of time to go over to the woods botanizing and looking after birds. We went to the beach a number of times and have collected a whole bucketful of starfish besides a lot of shells and a couple of king crabs which we will bring home. Spratt is a fine fellow to be with in the woods, for he knows every bird or bug, or plant that you are ever likely to run across. Lorin should have been here a little later - we didn't have a bit of time while Chanute and Herring were in camp - and the weather has been so much nicer since he left. We haven't had a rain since..."[75]

A couple of weeks after he left camp, Spratt mailed ten dollars to Wilbur to cover his camp expenses, but Wilbur would not hear of it. With sensitivity to Spratt's fear of rejection he replied,

> "...Regarding the ten dollars you enclosed, will say that we refused to accept any pay from either Mr. Chanute, Mr. Herring, or my brother Lorin, for camp expenses so we see no reason to make an exception in your case. Moreover, we feel that your help was worth more than your board, so you owe us nothing anyhow. But as I do not wish that money to be the first thing you see when you open the envelope, I will send it later. We owe you, not you us."[76]

Spratt had indicated once more in his letter the supreme importance he attached to his aeronautical work ("...really, fellows, I place this work ahead of everything else with me, I am going to succeed in this one study or fail in <u>everything</u>, and I want to keep it along in every way I can..."), and so with his refusal of Spratt's ten dollars Wilbur communicated a support which in later years would be misinterpreted by Spratt as an acknowledgement by Wilbur of the Wrights' scientific indebtedness to his thinking.

During the Winter and Spring of 1903, Spratt and Wilbur exchanged lengthy letters which were virtually one-sided in their focus on Spratt's thoughts and

theories. Wilbur seems not to have regarded this as odd, not only because he felt that he and Orville were indeed more knowledgeable than anyone else in the field and therefore in a position to be advisors, but also because he had adopted what was perhaps a natural attitude for the son of Bishop Wright - that of father-confessor, preacher, minister, and counselor to someone in need. Underneath this, he felt some strong resonance with Spratt's depressive feelings, with his inability to clarify his ambivalences, with his reluctance to assert himself, and with his profound occupational discontent. Wilbur had gone through a milder version of the same thing in his 20's, and had emerged a stronger man for it. He might therefore have felt some sympathy for a man who could not emerge likewise, and who at the age of 33 said of his main interest in life, "...bad weather to me is the best weather for I can only at such times find time to experiment without feeling that father will not like it."[77]

In April 1903, as it became evident that the methodical, hard-working, and intellectually brilliant team of brothers was inching inexorably towards success, Spratt's despair broke into full bloom. He had been unable in all his Winter correspondence to "convert" the Wrights to his theories, and he had been too modest or fearful of giving offense to declare outright that he was tired of Wilbur's obstinance in not recognizing the obvious truth in Spratt's theorizing. He indulged in a foment of contradictory feelings and resentments in an April 15th letter to Wilbur:

> "This sounds somewhat thin and watery perhaps, and perhaps is as well unsaid, but it is true just the same. I found your letter here as I arrived from the farm. I am sorry to have made such a mistake but am glad your cholders (sic) are so used to warding off argumentative blows, that no harm has resulted. I have been converted, before to that way of reasoning, for it is the only true way, but an experiment tempted me and I fell, now I repent and hope to be forgiven and placed on probation and I'll be good. You have in your letter hit the nail on the head in refuting the statement better than I could have expressed it, however, and I am glad to have received it.
>
> My O My how I envy your ability to act quick and to the point. I wish I

had more of that trait, but alas by general make and training I was moulded differently. I am never certain even when I am sure! And experiments that I make, and note the result with all accuracy and positiveness, in a few days I begin to wonder if it was really so, and fear that a mistake might have been made and I do it again. ...

Just now I am in a little trouble and have an attack of the blues. I don't know what is best to do. I was going to ask Mr. Chanute about it but I am going to unload on you - it's nothing very disagreeable.

I have solved the mystery of the lift of curved surfaces and proven it experimentally and by my methods of solution the proportion between lift and drift and relative values of nearly all surfaces can be found at any angle of incidence and I have promised to tell you of the experiments and will do so.

Now this sounds rather boastful and perhaps unreasonable after having just made the mistake I have, but all I ask is that you withhold judgement until you have seen the experiments. ..."[78]

In the remainder of this letter, Spratt committed a grevious error with the Wrights, after which they would never quite trust him again. He intimated that his newly discovered "secret" of flight was of such importance that he feared others might steal it from him if he announced it, and with the obvious notion that he included the Wrights as part of this group, he offered to meet them at a point halfway between Coatesville and Dayton - he even noted the railway fare and offered to pay it - to discuss a deal that would cement the Wrights' capacities for workmanship to his own superior intelligence. Then in a sad admixture of his old dependence with his new-found aggressiveness, he closed, "...Think this over and tell me what you advise, or what to do. I will throw no responsibility upon you by so doing, merely tell me how you would act under these circumstances." Thus did the uncertain visionary foray into the world of the hustle.

Spratt's ego was not the first to require a perception of the Wrights as merely skilled craftsmen. Back in 1901 Huffaker had fashioned a similar view, much to Wilbur's irritation:

> "He is astonished at our mechanical facility and, as he has attributed his own failures to the lack of this, he thinks the problem solved when these difficulties are overcome, while we expect to find further difficulties of a theoretical nature which must be met by new mechanical designs."[79]

Spratt's offer of a deal was insulting to the brothers, and especially to Wilbur, who was touchy about his lack of formal scientific credentials.

Yet even though they probably resolved to keep Spratt at a certain distance from their airplane work at this point, they nevertheless tried to maintain some of the old friendship they had felt with this disarming and often likeable character. Wilbur, like a good pastor, overlooked Spratt's offer and responded instead to his complaint of feeling "blue":

> "I see that you are back at your old trick of giving up before you are half beaten in an argument. I felt pretty certain of my own ground but was anticipating the pleasure of a good scrap before the matter was settled. Discussion brings out new ways of looking at things and helps to round off the corners. You make a great mistake in envying me any of my qualities. Very often what you take for some special quality of mind is merely facility arising from constant practice, and you could do as well or better with like practice. It is a characteristic of all our family to be able to see the weak points of anything, but this is not always a desirable quality as it makes us too conservative for successful business men, and limits our friendships to a very limited circle. You eny me, but I envy you the possession of some qualities that I would give a great deal to possess in equal degree.
>
> Regarding the matters on which you have asked my advice I must confess that I am at a loss just what to say. ...Stripped of superfluous words my advice would be "Do what you yourself think is best".
>
> Orville and I were very sorry to hear that your health is not good, and hope that you soon may be better. You should by all means avoid lying awake at nights studying out problems, as you did sometimes at Kitty Hawk. We will hope that other matters will right themselves in time."[80]

As time went on, Spratt's self-doubts and depression did not right themselves. His anxiety over failure grew, and on April 23, 1903 he penned a very personally revealing letter to Wilbur in which he repeated his offer of a deal, and even offered his wife as housekeeper and cook at Kitty Hawk if the Wrights would consent to building and testing his machine. The letter is long, but an eloquent

portrait of the heart of this conflicted inventor who spun out his dreams in tantalizing, frustrating proximity to the eventual conquerors of the air:

> "...Several years ago when I was planning my life in successful paths, it was my greatest hope that I should be useful, and failure attended all my attempts, and to be a physician and practice here where there are so many was never my first choice, and after a year sickness made that a failure and I began to think that life was a burden indeed with no redeeming qualities, and that of all useless beings I was the most in the way and forgotten by the powers that design paths for men. And yet there seemed to be a voice within that quietly bid me hope, that there was a mission for me to fulfill, and I resolved that in my heart that when the place for me should be shown to me, I would be so happy and satisfied that the doing of it would be all the reward I would want or ask.
>
> Well, one day, I tried to find how a tailless kite would fly and the sight of it captivated me so that I recognized in it my mission, and I thought of all my life before, how it had been laid out to fit just to fit such a calling, and I of all my acquaintances was best fitted in all of my surroundings and relations to existance (sic) for such work, and from that moment to the present to use a vulgar phrase "everything has come my way". My strength began to return, and channels have opened up that I never dreamed of and often times I have been almost forced to believe that birds and insects have come to me and performed for me, as they never do for others, answering my questions with all the voice they could command and gestures, simply and to the point, in such a kind and fearless way that I have loved them, and my own dullness alone has prevented my understanding. I have never let anyone into my heart and this subject has been my one and only motive in life from the beginning. The fire has burned deeper than any of you fellows have (sic) ever immagined(sic). It has always been my purpose to conceal it lest I be judged to be unreasonable on the subject. ...
>
> Now I tell you what I was thinking of when I wrote you last. The machine of my surface design will cost no more than one of yours. I want to work at this work right along - its my work - as I told you two years ago "It's my business". If one of you, could be spared from Dayton and go to Kitty Hawk with me, my wife would go to be our housekeeper, I would move my machines and tools - all of them that would be needed, and we could start a series of machines, and develop a machine on the quiet which I think would reward us in full for all money spent, at the award of prizes at St. Louis. At Kitty Hawk it is quiet - quite out of the world - the ground is beautiful for such work, and men who have had experience can be had for help. But - there is that word "develop" a machine. I know what I know but I don't know what I don't know - there may be other complications set in - there is a risk to run. I am rather inclined to think it is not a great one, and there is the cost of living. But it might be the means of turning out a fully tried and capable machine at the first output known generally. And, then, on the contrary, if I publish my experiments now it may be the means of advancing the work faster than we can do it, and save many a poor inventor his misspent dollars. ...

I am no gifted writer and the thing sounds rather abrupt, but I do not want it to be too wordy. I would like you to be litterary (sic) critic, as well as interested in the experiments. There has been, I think, this difference in our lines of work, altho they have been in the same channel. You and Mr. Chanute too have had predominantly in your mind the question "what?" ... The question that has always appealed to me is "why?" ...and so I have never felt that a full sized machine experiments (sic) were the closest answer or method of getting an answer to my question but I have found this now I think, to a satisfactory extent and now I want to put it in practice, and I think and hope that in the experiments you will find at least a fuller answer to your questions.

I will make the one request, however, that you return it as early as convenient - take all the time over it you desire, however, - and if you think it better policy not to publish it for any reason let me know. However, possibly you may not see in it as much as I think I see. I know your views and mine do not agree as to possibilities in some minor points, for instance you are more or less looking towards a motor. If a machine requires of necessity a more powerful motor than a man to carry a man, the practicability of a machine is hardly worth discovery to my mind.

...I thought one sheet would do me but I see I have run onto another. Your idea of argument and mine is - or rather your ability to argue and mine is cinsiderably different. Of course ideas are brought out in debate and under certain conditions it is very profitable. But when a person is honestly looking fir truth, or trying to show a truth to another, and an argument arises, before most people know it they have thrown aside the desire to defend the truth and defend their personality. Next thing they know they make a miss statement (sic) and defend that in defense of themselves, next thing they know the other fellow sees the situation and then things warm up and the truth sought for is the flower garden where the cats fight. Every real argument for argument's sake that I have ever got into has left edges on me and never knocked any off."[31]

Spratt's somewhat narcissistic blindness to the Wrights' own progress can only be understood in terms of his desperate insistence on being regarded as successful, his almost magical and omnipotent investment in flight as compensation for a life felt to be otherwise a failure, and his equally compensatory empowering of his ideas with the qualities of near-divine revelation. Beneath it all, of course, is the physically weak student who was never able to push himself through to any conventional success and who coveted the traits of push and drive he saw in Wilbur and Orville.

Wilbur skillfully and compassionately - politely might be the better word -

hid whatever embarrassment of self-recognition, or anger, that Spratt's letters aroused. Perhaps he detected the shadow of a terribly lonely man, reduced to the companionship of bugs in the fields, and living for so long in the community of his own fantasies that he couldn't fix his own position in the real world.

Spratt's writings became increasingly obtuse and difficult to understand after Wilbur declined his offer of an experimental partnership, and he suggested his feelings to Wilbur in the metaphor of a chicken sitting hopefully on a glass egg with a crack in it. Wilbur sympathized,

> "I think you do well to keep hatching at your egg 'til you see what does come out of it. Even if you fail to get the chicken you expect, it may be all right anyhow. Turkey is just as good as chicken. Your experiments are very original and will attract attention if you are careful to bring them within the comprehension of the ordinary student." [82]

The potential clash between Spratt and the Wrights went back underground for over a year, not to emerge until the Spring of 1905. Spratt suffered quietly the indignity of the Wrights' refusal to join his venture. His full-sized prototype was put back in the barn loft, looking like Spratt himself "rather stiff and cramped in the joints, ...very tired and uncomfortable. ...I wonder when I pass that way if it will ever be able to fly - or in my imagination even, to soar as it once did."[83]

On Wednesday, September 3, 1903 Wilbur and Orville left Dayton together for what would prove to be their most historic trip to the Outer Banks. They arrived on the 25th, salvaged and refurbished their campsite and living quarters, and made some practice glides with the 1902 machine which they had left in the shed a year ago. They also learned soon of Langley's October 7th failure on the Potomac (the first of two) with his man-carrying Aerodrome. Spratt arrived in camp on October 23, and as Orville noted in his diary, they all "sat up till 11 o'clock discussing some of his theories of flight."[84] His

very presence in camp that year, obviously on the Wrights' invitation, suggests that they either did not regard him as seriously subversive of their plans or that their basic sense of decency and friendship toward him was still alive. Over the last week in October they all suffered through some cold spells, rigged up a makeshift stove to keep warm, and explored the woods area for wildlife. Spratt helped Orville and Wilbur with launching the 1902 glider on practice runs, but never did anyone but a Wright ever glide on a Wright-made machine.

Chanute arrived on Nov. 6 in a strong, cold wind and left six days later, sending back some gloves to the younger gliders still on the bleak shore. Spratt left the same day Chanute arrived, dropping off in Norfolk for the Wrights some cracked propeller shafts to be shipped express to Dayton for repair by Charles Taylor in the bicycle shop. He was glad to get away from what he called the "low sands" of Kitty Hawk which he found depressing. Yet when he had arrived back at his farm he

> "found lots of work needing my attention and among the other things I found it necessary to get my poor old flying machine out of the way so that corn fodder might be stored in its place, and take it all in all I have had a slow simmer of the blues in regard to such work ever since I have left you. You are too swift for me and I am hardly in the race at all, and have been seriously - half seriously - been considering the idea of trying to hire out to someone - Langley, maybe - and see what kind of a reply I would get. If I could do so and really be sure of not interfering with your relations to him in any way I would more seriously consider it, in truth. It seems that I am loosing (sic) time fooling as I am here on this farm altho it is an improvement on my home in town. ...
>
> Love to you both,
> G.A. Spratt
>
> Also Mr. Chanute if he is with you."[85]

The ambivalence of hero-worship versus envy is evident throughout Spratt's correspondence, as is his tendency to exaggerate the power and importance of the Wrights' connections with Samuel Langley, whom they simply did not know. It is clear that he felt affection for the brothers, but his self-effacement and

brooding were a bit irritating to the ascetic and independent Wilbur, who wrote him to "Quit it!" Wilbur wrote to Spratt while alone at the shore, as Orville had left for Dayton on November 30 with still a second set of cracked propeller shafts, to supervise personally the making of steel shafts this time instead of the usual wood.

> "I am sorry to find you back at your old habit of introspection, leading to a fit of the blues. Quit it! It does you no good, and it does do harm. I have sometimes thought that this is the result of your living and working too much alone. I am not certain but that your idea of getting into the Smithsonian may be a good one ... I doubt whether your friendship with us would be a recommendation in the eyes of the Secretary, but if you decide to make application and wish anything from us, we will be glad to respond..."[86]

On the way back to Kitty Hawk with the new shafts Orville read in the newspapers of Langley's Aerodromic disaster, and near drowning of poor Charles Manly, in the Potomac on December 8th. Langley's disgrace was severe and he suffered greatly under the national outpouring of scorn reserved, it seems, in its most acidic forms for those of langley's combination of erudition and self-importance. His aeronautic research was finished forever, buried not only under the chilly waters of the river, but under the frostier deluge of of Congressional inquiry and public ridicule (he had used War Department funds, obtained secretly and without the required Congressional approval, on the promise of producing a craft for possible use in the Spanish-American War). His biggest accomplishment had been as an example to others that prestigious and well-respected men could be interested in aeronautics. He also spurred Charles Manly and a New York engineer named Balzar to the production of a magnificent and powerful gasoline engine, nearly five times as powerful as the one which sat on a canvas wing 250 miles to the south. His health declined rapidly afterwards and he died in 1906 following a series of major strokes.

The Wrights' crowning triumph of December 17th came on the heels of this public relations Waterloo for aviation, but nevertheless found its way in various shapes and versions into the more adventurous papers. Spratt was visiting relatives in Connecticut when he picked up the Philadelphia Inquirer to read of the brothers' successful "three mile flight" out over the ocean. He offered his congratulations and then, ever blinded by his own needs, went on with all sincerity to propound his theories and urge them on Wilbur and Orville! Moreover, he announced his plans once again to contact Langley about possible employment. Langley, of course, was no doubt never in less of a mood for the likes of George Spratt than in late December, 1903.

On January 7, 1904 Orville wrote from Dayton to inform Spratt of the accurate details of their four flights on the 17th of December. Wishing not to inflame Spratt's anxieties about falling behind, he made no reference to the plans he and Wilbur had for making a fortune on a more practically developed Flyer, and he invited Spratt to join them again in the coming summer months for some more polite experimenting.

Spratt's anxieties were not cooled. He did not join the Wrights for any more experimenting and was prompted by their success to build a very large machine of his own. Wilbur tried to discourage him from this but he persisted. In September, 1904, Wilbur's predictions came true, to Spratt's exasperation, and the glider proved too unwieldy for one man to handle, too erratic in wind gusts, and too weak in its construction to withstand crashes. Yet the demise of Spratt's machine was offset by the birth of his first child - "a big, healthy, lusty little youngster whose name is George."[87]

Paternity, combined with the goad of the Wrights' success, induced a new independence in Spratt. With increased security in his abilities and competence to produce something of worth, he felt freer to express his anger at the

brothers' stubborn refusal to adopt his ideas. Convinced in spite of Kitty Hawk, which he saw as a simple mechanical achievement, that the "why's" of flight still awaited his contribution, he declined again to join the Wrights in their 1905 trials at Simms Field, and at the end of April 1905 he exploded with the frustration of an exiled prophet:

> "... Why have you never made use of the superior merits of the arcs (his concept of the ideal wing surface)? Why are you so easily satisfied with your surface when better ones are to be had? - don't you believe it is so? or are you too much interested in the motor at present?[88]

Spratt had mistaken, as so many others would after him, the nature of the Wrights' creation and discovery. They had in his eyes simply fitted a motor onto the standard Chanute-Herring biplane glider and cranked it up, taking off on its back with no particular skill save that needed to bolt the engine in place on the lower wing. He appears not to have grasped their system of three-dimensional control, their concept and design of the propeller as a curved, vertical, rotating aerfoil, their exact engineering of weight, balance, stress, and power; and finally, their precise, aerodynamically efficient wing surfaces, designed not by hit or miss, but by wind tunnel research under tightly controlled conditions. Failing thus to comprehend how far behind he was, and feeling time passing him by, poor Spratt began to chase after the recognition he craved. The Wrights' encouragement over the past five years had served only to convince him that he indeed had "the truth", and he continued to pound the intellectually confident and superior Wilbur with lengthy theoretical diatribes and ceaseless neuroticism.

But Spratt was also concerned lest he communicate too clearly his truth and give away his insights to any competitors, among which he now plainly numbered the Wrights. The implicit insult, no less than the mental effort required to decipher and follow Spratt's reasoning, finally pushed Wilbur

to express his irritation:

> "Your letter was received some time ago, but as I could not understand any of it, after reading it several times I laid it aside to allow time for it to soak in but I do not find that it is any clearer than before ... Your explanation of your new find is entirely incomprehensible to me, as you give no diagram to illustrate the manner of mounting and rotating the surface experimented on, and do not state whether the axis on which it it rotated lies within the surface itself, or, at the center of the arc of curvature..."

Then, as if to offer an explanation for Spratt's disorganization,

> "We are both in good health, and trust that you have gotten over your bad habit of lying awake all night studying."[89]

In November, 1905 Spratt offered the Wrights some advice on a problem they were having in holding altitude during banked turns. Wilbur had mentioned the problem in a letter, and Spratt interpreted this as Wilbur's seeking out his services as a consultant. His remarks were irrelevant if not brief, but quite apart from his capacity to act as a consultant to the Wrights, one must note the ease with which he switches roles with Wilbur for the first time. Isolation from the aeronautic fellowship, along with growing personal security and anxiety over time passing him by, had allowed his secret grandiosity - the quality which empowered him to communicate with wild insects and birds - to swell, and thus he gradually became the sort of person he had always feared and disliked: an opinionated and overbearing dogmatist. In so doing, however, he also became the sort of person he had always loved and admired: Wilbur Wright. For his part, Wilbur saw in Spratt an emotional vulnerability which in his 20's he had with difficulty learned to master and even to suppress in himself. He saw a sociability and facility to amuse and entertain, a sense of humor which was open and even childlike, an introspection and sensitivity which, if flawed and overdone, was not iron-clad in control and distance from others. He had distanced himself in the role of counselor from Spratt's vulnerabilities and emotionality. To him Spratt was a reminder of how far

he had come, and also what he had been forced to abandon in terms of personal intimacy.

Correspondence between them tapered off during 1906, though the Wrights accepted a persistent invitation by Spratt to visit his farm in early December. This they did, on their way home from a New York Aero Club show. Wilbur wanted to remember Spratt as he had been in the earliest days on the beach, and wrote that "we will hope to be able to make a stop at Coatesville on our way back, if you are still alive and willing to spend a day spinning yarns for us as in the old days at Kitty Hawk."[90] The visit by Wilbur and Orville to his house, their presence bodily in the center of his private world, revived all his old feelings of insecurity rather than his joviality, and he wound up confessing nearly two years later that he felt the Wrights had been disappointed by the visit.

During 1906 and 1907 the brothers were deeply involved in business negotiations and trips to Europe, and Spratt became an ever more remote figure in their lives. They probably could have forgotten him except for Christmas greetings. But communication was renewed when Spratt read in the papers of Wilbur's May 14, 1908 crash at Kitty Hawk while preparing for the summer flights in France. Spratt expressed his continued hope to develop a flying machine, wished that "there was two of me" (like the Wrights), and said that he might go to Kitty Hawk himself to experiment in spite of the fact that "the inervating (sic) climate or something seems to take all ambition out of me." He had accomplished a triumph of assertiveness in recent months which had improved his health greatly, though:

> "I just deliberatley quit work that made me feel restless and tired - just quit like a mule or a jackass or something of that kind. I find that there was general dissatisfaction at first, but no body has used ordinary jack-ass treatment on me, and the scheme seems to be working pretty well, too..."[91]

Assertive of not, Spratt retained his full measure of ambivalence toward

Wilbur, who achieved world-wide acclaim for his dramatically successful flights at Le Mans. In a September letter he relayed his usual self-doubts, but also suggested for the first time that he felt he deserved some credit for the Wrights' success:

> "I have always felt that your visit to my home (in December 1906) was a disappointment to you, not on account of any action on your part, however. Perhaps my own dissatisfied spirit is to blame, for I feel much a like a hungry dog stuck in the cold mud and can't get home to his dinner - at least I suppose I feel that way - exact statistics are wanting in the case. The fact that I did not hear from you did not lessen such suspicions of shortcomings on my part, although to tell the truth I do not know whether it was my duty to write first to you or you to me. However, I am glad to accept the present as it is.
>
> ... I have a genuine interest in your welfare, and in the machine itself, for I feel that a part of that machine is a part of me. I do not know how you feel about that, but it seems to me that the method of mounting test surfaces and producing the parallelogram of forces which was original with me, proved of no small value to you, and gave a directness and positiveness to your work. I rejoice in your success, but feel at times the lonesomeness of being far in the rear."[92]

Spratt travelled to Washington D.C. in mid-September to witness Orville's Ft. Meyer trials and was present during the September 17 crash which killed Thomas Selfridge and hospitalized Orville for six weeks. Spratt telegrammed Bishop Wright that Orville was "not seriously hurt now fully conscious", and returnedto Coatesville where a week later he wrote some encouraging words to the recuperating Orville. Those words were something of a hodge-podge of personalized insights into suffering and the need for patience which are very nearly as confusing as his aviation theories. No doubt they were of minimal value in cheering up the pained Orville:

> "... I know from experience what it is to spend weary days and sleepless nights in bed. I know also a feeling of hopeless discouragement with a rather unwelcome indifference to the thought of death. This latter, I trust will not be experienced by you. I do not believe you will let this feeling take possession of you even though you find that to do nothing - just to lie and see time go by slowly carrying your plans into the past with it - this is more trying than work and lends aid to discouragement in itself..."[93]

One does not have to look too deeply to see the unconscious glee which Spratt experienced at the sight of the stricken success story - as if to say "Now you know how it feels." This spoils his message of sympathy, which was probably genuine enough on the face of it, and serves as a good instance of neuroticism defeating better intentions.

A year later Spratt came out openly and asked Wilbur

> "...if you do not think I can claim a share of your success? ... It seems to me you have received from me a means of analyzing pressures that has worked immensely to your personal advantage and all I have received cannot be considered in any degree a fair compensation.
>
> I believe you can now reciprocate without compromising your future if you are in a mind to do so."[94]

Wilbur's reply, remarkably moderate still, was as follows:

> "It is quite true that before we had very seriously taken the subject of the measurement of lifts and drifts of surfaces, you told to us your idea of balancing the lift of a surface against its drift (as you described it), and determining their relationship directly, instead of measuring each independently; and that later when we took up that subject we utilized the idea in a machine of different design from yours. We have not wished to deprive you of the credit for the idea, and when we give to the world that part of our work, we shall certainly give you proper credit. We believed then and believe yet that it is a more convenient method than measuring each (lift and drift) separately and then making the comparison as Langley, Lilienthal, and most other experimenters had done. But while we considered the idea good I must confess that I am surprised and a trifle hurt when you say that the advice and suggestions we gave you in return "cannot be considered in any degree a fair compensation." I suppose that when two men swap stories each thinks his own story better than the other's, and it is about the same when men swap ideas. But aside from the ideas and suggestions you received from us, we also furnished you copies of our tables, not only those made on the machine of which your idea formed a part, but also on the pressure-testing machine. My ideas of values may be wrong, but I cannot help feeling that in so doing we returned the loan with interest, and that the interest many times outweighed in value the loan itself. Has your idea yielded you yourself tables as comprehensive and accurate as those you received through us?
>
> But if you really feel that you have given more than you have received yet, I am quite ready to place at your disposal any scientific information or practical knowledge which we have gathered in ten years of investigation and practical experience.

> Tell us your needs and we will help you. I learn from a gentleman I met in New York, who said he was associated with you , that you are experimenting with a machine on which you expect to mount a motor. Perhaps there is some point about which you would find our advice useful. I will be at College Park for a few weeks and will be very glad to have you come down. Orville and my sister are now in Berlin, but expect to return soon.
>
> Please give my respects to Mrs. Spratt and believe me ever your friend."[95]

Wilbur's civility continued toward Spratt even after the latter had filed, on December 2, 1909, a sworn deposition against the Wrights, and in favor of the Herring-Curtiss Co., which was manufacturing and exhibiting airplanes which infringed the Wright patents. Herring had talked Curtiss into a partnership (Curtiss later broke relations with him), and had even entered into an agreement with Spratt regarding the development of Spratt's machine. Said Octave Chanute to Spratt when he learned of this in December of 1909, "How, knowing Herring, could you be such a goose?" Spratt eventually pulled out of the deal, but not before filing the deposition against the Wrights. What role Herring had in its wording is not known. But the inaccuracies in it were so gross that they are interpretable only as vindictiveness or self-delusion:

> "I am 39 years of age and reside at Coatesville, Pennsylvania. During the year 1896 I became interested in the science of aviation...
>
> Among other things, I devised a method and apparatus for correctly measuring the lift and drift and the position of the center of pressure of various types of surfaces capable of being used on heavier-than-air flying machines. These experiments covered the field in a new line so thoroughly that when the results and the description of the apparatus were communicated to Mr. Octave Chanute, in the year 1901, he introduced me to Wilbur and Orville Wright, in order that I might communicate the results of my work to them for the purpose of helping and furthering their work, which I then did.
>
> ... The disadvantages of substantially flat planes were well known to the Wrights at the time I first met them, and they at once availed themselves of my methods of investigation and made an exhaustive series of experiments with surfaces of various curvatures to determine the relative efficiencies of various surfaces, and prepared tables showing, in minute detail, the results of their experiments, which tables were examined by me. These tables showed the much greater lifting effect and controllability of curved surfaces over approximately plane or

> flat surfaces. These facts were so well recognized by the Wrights that, as early as 1901, they were using curved surfaces exclusively, and so far as I am aware, have never since used, on any machine, whether glider of power-operated, a substantially flat plane; nor, in my opinion, would such a machine be practically operative.
>
> In the year 1901, and according to my best recollection, in June of that year, at the invitation of the Wright brothers, I visited them at their experimenting grounds at Kitty Hawk, N.C. I was there for about two weeks ...
>
> Prior to my every having seen any of the Wright machines or having met the Wrights, I was familiar with the idea of warping wing surfaces and had attempted to correct the deleterious effect of such fixed warping by setting the vertical rudder to an angle with the model's midline, with the result that the deflection to the right or left of the model's line of flight was corrected ...
>
> The facts above set out constitute but a small part of my work, as I have devoted my entire time for the last thirteen years to the study and practical development of the art of aviation."[96]

As stated earlier, it is not really our aim to vindicate the Wrights or get too deeply involved with the minutiae of aeronautical theories. Suffice it to say that Spratt's version of his contribution to the Wrights' success was exaggerated in several respects and plainly false in others, and that as his own machine infringed the Wright patents, he was not a disinterested witness for the Herring-Curtiss Co. Wilbur and Orville had a chance to correct the record in their own affidavit in the suit, which they eventually won in 1914. In spite of Spratt's apparent turning against them, the Wrights kept up polite appearances and Wilbur sent Christmas greetings the following year, in 1910.

In May, 1912 Wilbur died of typhoid fever. There is no record of Spratt being at the funeral or sending his condolences, though it would be difficult to imagine him not making some acknowledgement to Orville or the family. Orville was not much of a letter writer, and so it was Spratt who contacted Orville in 1914, nearly three months after the U.S. Court of Appeals affirmed a lower court ruling in favor of the Wrights in the Curtiss suit. It was now

clear that the Wrights had a monopoly on the invention, and while Spratt had not gotten anything but politeness from Wilbur he may have thought that Orville would be willing to bargain with him about sharing the limelight. He probably did not realize that after Wilbur's death Orville's active involvement in aviation gradually declined (he sold his shares in the company and went into a sort of semi-retirement in 1915 at the age of 44), and that his efforts to ally with Orville would be as ill-timed and unappreciated as his desire to be with Langley after the Aerodrome failure of 1903. Spratt sent two letters in April 1914, asking if Orville would be interested in "the manufacture and sale of a type of airplane differing from your own..."[97] Orville replied with a polite rebuff, implying that Spratt could not possibly have any "new idea" since the secrets of flight were already discovered, but that the Wright Company was "always interested in anything that attempts to improve the efficiency or the quality of the stability of flying machines."[98]

That was the end of the Wright-Spratt relationship. Or nearly the end. Spratt's anger was not the sort to dissipate over time, but grew hotter as it fed on the resentments of time and energy gone by. Eight years after rebuffing Spratt's offer, Orville unwittingly gave him the opportunity for revenge. He wrote him in November 1922 requesting any old letters Spratt might have which would aid Orville in writing a history of the first airplane. He made it clear that he was not going to document all theories of flight or all the experiments which had been done by others, but wished merely to record the story of the Wright Flyer and how it came to be. That is perhaps what angered Spratt, who by this time had convinced himself that his theories had virtually launched the Wrights into the high airs of fame and fortune, leaving him as always low of the farm. Two days after Thanksgiving in 1922, Spratt fired off a bitter and cold response to Orville:

"My dear Mr. Wright;-

I believe I have all your letters. I have all of my correspondence to and from Mr. Chanute excepting possibly two or three letters missing, and some other records of perhaps lesser value.

I would like to call your attention to the following however. The part I played in the making of your machine was not small. I pointed out the cause of the failure of your first machine, and how to correct it. The method of testing surfaces that I gave you eliminated guess work and made progress positive. You sought and accepted help throughout the development period of your machine and when success became assured you then made the decision that you "preferred to work alone". After having for twenty years capitalized upon this as your own work I do not see how you can give a correct account of this without bringing yourselves into open censure.

May I add more:- You used the testing method with the expressed promise that you would publish the tables that you would make with it. This exaction and the promise was made because of the clearly expressed and openly agreed understanding that we were working together for the general advancement of the science, and you then were welcoming and showing appreciation for the publicity Mr. Chanute gave your work. A year or more after you had made the tables I reminded you of this promise and your answer was evasive;- you were going to make a more accurate set and publish them. The promise was never fulfilled.

As success began to appear as a possibility Mr. Chanute and I both - noticed your growing reticence and he said "They are not the first young men I have helped into a fortune who have shown anxiety to forget me when they have seen it coming."

When it became known to me that you had applied for a patent I asked you if you had protected yourselves against the idea of making the wings rigid and placing control vanes between their extremities. Your answer was that you considered warping so much better that if anybody wanted to they could do so. Yet when Curtiss did so you brought suit against him.

At a time when I thought success enabled you to reciprocate, I put this matter before you. Wilbur's letter of October 1909, admits the origin, the use, and the value in a very begrudging manner and evades obligation. May I state here that my letters to you at the time the tables were made state, and my acts since that time substantiate the statements, that I had only a general interest in the tables, that I had no intention of making any practical use of them, that my interest lie (sic) wholly in the analysis of flight, that I believed your machine faulty in principle, and that I had no intention of attempting to construct until I was satisfied that I understood the forces involved. May I remind you also that my introduction to you came as a response to your appeal to Mr. Chanute for help because your first years machine had been a failure.

When I did find wherein the fault of your machine lay, I told you. You were too ready to refute it.

Later, in 1914, when I wrote to you and told you I had successfully proven the idea in a full sized machine, my letter was unanswered. I appealed to you in this matter even though your actions so clearly acknowledged the desire to escape your obligation to me because I believed the idea had sufficient merit to give you an advantage as a manufacturer which would be desirable. I asked no favor but felt that I was entitled to your cooperation, and you could not doubt my judgement concerning the test. You knew the difficulty under which I worked but the thought had not then occured to me that you might prefer that disadvantage to remain undisturbed.

I have done all I could to help you for the sake of the work and have not molest (sic) you with the claim I have against you, and which your actions seem yo recognize. It appears to me, however, that you have already lost the greater part of the honor and profit that could have been yours, by the exercise of this same spirit towards others. You have opposed progress and worried yourselves to the limit because others were permitted to succeed, and this is a matter of record.

It makes little difference what you write, history writes itself.

I have a fairly complete account written pointing out the origin of the machine, and those who care to read will not doubt. I feel disposed to put you on your guard again as I did with the ailerons and you may take it as friendly if you please for Aviation is worthy of leaders who are farther sighted and broader minded than you seem to me to be now.

I cannot see how any true service to history can result by sending you your letters;- I have no desire to keep them from you, and no objection to your having copies of them, I simply am not interested."[99]

Orville did not pursue the matter, and indicated a few years later that he regarded Spratt's actions and feelings to be the product of emotional disturbance - "long brooding", he called it.

In retrospect one has to ask how this erratic and self-effacing man, who later became so grandiose, worked his way so close to the hearts of both Wilbur and Orville. To begin, they were far less rejecting of his brand of psychological disequilibrium than they were of others' flaws - say, the self-serving ambition of Herring or the "disagreeable" moralizing and sloppiness of Huffaker. Spratt's humulity and geniality were an instant "hit" in the 1901 Kitty Hawk camp. He was in these respects quite similar to Orville, both in his humor and affability and in his seeming absence of

excessive personal ambition. Additionally there was a boyish side to him that shared the Wrights' love of exploring and "botanizing" on the beach and in the dunes. He was - or seemed - content to help others and offer his services where needed. Though his relations with the Wrights over the years eventually brought out his more unpleasant side, he was not obviously an unfriendly or inhospitable man. His neurosis manifested itself not in an overbearing way, but rather in an excess of what the Wrights would consider basic good virtues - humility, humor, and modesty. In a sense, Spratt was merely overdoing a good thing, and much of Wilbur's early counseling seemed aimed at correcting this imbalance - this surfeit of decency - in Spratt.

In another sense Wilbur was particularly able to empathize with the doctor-turned-farmer. Spratt, like Wilbur, had gone through some painful times during which "illness" prevented him from following his father's profession. Spratt could not doctor, and Wilbur could not go to Yale Divinity School. Both men felt deeply a sense of duty to the homestead and had made considerable sacrifices of their own needs and goals in maintenance of the parental home. As adolescents, both had felt bound to be about their fathers' businesses but had been forced to change plans due to accidental happenings beyond their control. It is likely, and sure in the case of Spratt, that both had experienced some guilt over any secret wishes to compromise on their committment to the homefront, and had nurtured some resentment over the degree of control exerted, or felt to be exerted, over them by their fathers. Both were, during their twenties, very uncertain of what they should do in life, and both had settled on the rather "oddball" but promising enterprise of aeronautics in spite of or maybe because of their otherwise strict conformity to parental expectations. Each, without the other's knowledge, had contacted Octave Chanute and had established

a working relationship with this father-figure of early aviation within months of one another.

As Wilbur grew to know Spratt he no doubt had some feeling that "There but for the grace of God go I." His father Milton had evidently been more supportive of his efforts than Spratt's father had been, and he had the additional help of a very powerful sibling intimacy with Orville and Katharine. He was not neurotic in Spratt's proportions - the only remainder of his once vulnerable sensitivity was a feeling that he had a weak heart which might give way under stress - but he had enough empathy for Spratt's self-doubts and depressions to afford more patience over the years than he granted to most others who had "turned" on the Wrights. This identification with Spratt's vulnerabilities was perhaps the major cause of his overlooking early in the relationship the kernel of hot envy that was so well-layered over with self-effacement and insecurity.

For it was clear very early on that Spratt too had the feeling "There but for the grace of God go I" when he brooded on all Wilbur's advantages and his own limitations. In the beginning Spratt tended to see Wilbur's advantages in very flattering terms - self-confidence, self-assurance, the ability to hold an argument, to see a task through, etc. But as Spratt's own grandiosity came to the fore, he began to see the Wrights' advantages as more circumstantial and accidental, abd therefore somehow unfair. There were two of them to one of him. They were self-employed in a machine and tool trade, while he was a farmer. They had time, he didn't. They had good health while he was sickly. They had independence, while he was obligated to his father. They were good with their hands, while for want of this his superior brains idled in neutral.

But why or how did Wilbur allow himself to be pulled into the relationship when Spratt began to turn sour, which was almost from the beginning if one

were inclined to see it? The answer, I think, lies in Wilbur's intellectual arrogance, his need to prove himself right in any argument, his need to win out over error - his mental righteousness. He could never walk away from a good theoretical argument, even when enmeshed in the mazes of Spratt's writings, and thus he was drawn into investing in the inflationary economy of Spratt's ideation. Measured in this economy, Wilbur's ideas were slowly deflated in importance to the point where Spratt denied them any significance beyond that acquired by indebtedness to himself. It was the righteous and angry Wilbur of the U.B.C. defense who proved momentarily blind to the confrontational judo of the self-doubting Spratt. Accustomed to enemies who drew clear battle lines, Wilbur too easily took Spratt's intellectual discourses on their merits and failed to discern their underlying hostility. Surely the mild and even sickly Coatesville farmer could not be an antagonist.

Additionally, it was the Wrights' blindness to the potentially stifling power of paternal autocracy in the home that prevented them from appreciating, and therefore taking seriously, the roots of Spratt's anger and discontent. It also blinded them to the more subtle aspects of Spratt's attachment to Wilbur in particular. Bishop Wright had been autocratic but benign. His control had centered on his daughter Katharine, and on his first-born son Reuchlin. Wilbur was not temperamentally inclined toward rebellion, and Lorin and Orville were notably accomodating and easy-going. Neither Orville nor Wilbur ever clashed with their father, and neither ever had any reason to assume that strict paternal authority might prove unhealthy for a given youngster. If Father's rules were conventional, common-sensical, and duty-oriented, they were at a loss as to why any good youngster might wish to go against the grain. Therefore they could not understand Spratt's discontent nor could they anticipate how this resentment might transfer to them and their

notions of Right and Authority. Said Orville of Spratt in 1927:

> "He complained bitterly of his father's treatment of him in keeping on a farm. His father also was a doctor, and I believe a considerate parent. As far as my brother and I could see he was doing the best thing for his son, whose health did not permit him to practice in his profession and whose peculiar and impractical make-up did not equip him for making a livelihood."[100]

At the age of 33 Spratt must have cut a somewhat juvenile figure, complaining about parental interference in his own plans. But there was a psycho-logic in his "peculiar and impractical make-up" which evaded the conventional and practical comprehension of the unpsycho-logical Daytonians.

To be sure, Spratt was not without his own insights into the Wrights' motivation and character. He was not alone in decrying the insularity with which they tightened the cricle around their Flyer and tied up virtually all other investigators in streams of litigious flak. And though history has verified the Wright contentions that technically they owed nothing to anyone for the design and construction of their airplane this contention is a bit too narrow in its exactness. As more recent historians have well illustrated,[101] Wilbur and Orville's success did not occur in a vacuum. Had they tried ten years or even five years earlier with their work they would not have succeeded, for the gas engine technology was not yet to the point of being successfully exploited. I have tried to imagine scenarios more benificent than the legalistic and mercenary one which the Wrights wrote following their ascetically beutiful triumph on the winter shores of the Atlantic. One pictures gestures of grandness in acknowledging all the support and stimulation others have offered, with perhaps special thanks to Dr. George A. Spratt of Coatesville, whose idea of measuring simultaneously the lift and drift of curved surfaces was crucial to a positive outcome. Such largesse could also have been extended to others, including Octave Chanute, and Messr.

Herring and Huffaker who helped at Kitty Hawk. But such credit simply would not have been accurate. And then, one sees a small army of Herrings and Huffakers and Spratts and Chanutes and Voisins and Ferbers and Delegranges and Whiteheads and Butusovs and Zahms and Montgomerys and Langleys - all clambering to claim ascendancy and priority over two, high school-educated bicycle makers from a small town in the Midwest. Wilbur and Orville could have lost both fame and fortune to a community of inventors, scienties, and schemers whose ambition was arguably more ruthless than their own. One might say that Wilbur pushed the patent suits too far - nine in the U.S. and more in Europe - out of his sense of having been wronged, and out of a certain prosecutorial zeal reminiscent of the U.B.C. trouble. But one can argue less convincingly that any indebtedness to others could have been acknowledged without bringing on a shower of ego-inflated claims such as that which Dr. Spratt rained on Dayton in 1909. It was common among the Wrights' competitors to hold that the Wrights had really taken their ideas from a more educated or renowned person (their college-educated sister was even used as a possible source of their knowledge!). Aware of this, and self-conscious about their want of formal scientific credentials, the Wrights decided not to acknowledge even the slightest technical debt to anyone, which further inflamed resentments, especially those of their closest friends, George Spratt and Octave Chanute, whom we will discuss shortly. I suppose the issue ultimately boils down to one's vision of man's basic nature, and in the Wright home this vision was one of "total depravity". It was not a vision without ample evidence in the affairs of inventors and businessmen.

On February 6, 1927, Lancaster Pennsylvania residents awoke to find in the Magazine section of the Sunday News a picture of a slight, bald, bespectacled man, clean-shaven, with large eyes and a small, round face.

He peered out across the page at the headline, "Flying May be Revolutionized by Invention of Coatesville Expert". Twenty-three years after the Wright success at Kitty Hawk, the public was treated to the following press account of the early days of flight:

> "... In 1902 Dr. Spratt was one of a group of four ... who gathered at Kitty Hawk, N.C. Month after month the small group studied and labored with gliders in an attempt to solve the problem of human flying.
>
> After many of the problems of aeronautics had been solved by this little group of pioneers, Orville and Wilbur Wright made the first attempt to attach power to the aircraft they had built. Attaching a motor to a great box kite, the Wright brothers attempted to fly and failed.
>
> Dr. Spratt and Mr. Chanute were then called into consultation. Changing failure to success, Dr. Spratt made certain changes on the plane, equipped it with curved wings and then sat back while the Wrights made their short but epoch-making flight.
>
> Dissatisfied with the plane, Dr. Spratt then began his long search for that something which he declared was still lacking. Returning to his small Pennsylvania farm in 1905 Dr. Spratt continued to work upon his gliders. Virtually ostracizing himself from society there, he constructed hundred of kites, wind machines, and gliders during his partial seclusion of nearly a score of years' duration..."[101]

If Spratt himself had been the source for the facts of this story, then we would have to conclude that the poor inventor had grown positively delusional on the subject of the Wrights. But apart from the machinations of his memory, Spratt had indeed come up with a new design for aircraft. His invention, reported in the Lancaster Sunday News, was a movable wing which turned on a universal joint above the pilot's head and eliminated the necessity of ailerons and rudder. Spratt successfully piloted a prototype craft of this design. His son George eventually anwered his father's wish for "two of me" by becoming an aeronautical engineer with the Stout Research Division of Consolidated Aviation in Dearborn Michigan, and he developed his father's design into a "Flying Jeep" during the war years of the early 1940's. The concept was finally regarded as viable for small craft but unworkable in larger airplanes, and in the technological Darwinism which selects our most

effective aircraft, this machine has perished. Its purpose seems not to have been to fly more efficiently or effectively, but rather to show that there was a simpler design than the Wrights', that something could be flown without using the Wrights' control system, that there was an alternative to Wilbur and Orville. Spratt's son always prided himself on the fact that he could fly the Flying Jeep, but never knew or cared to learn how to fly a conventional airplane.

It is perhaps for others to evaluate Spratt's contribution to aeronautical progress. There is no doubt that the cracked glass egg he sat on for so long and with so much pain did eventually hatch something of a successful nature. And one must be cautious lest the need to "set the record straight" on the Wrights' achievements err in distorting those of others. In another context or in another time - in his son's time, for instance - a man of Spratt's intelligence and determination might have found himself a secure niche with a dependable institution or company. He had tried to do this with the Wrights and with Samuel Langley, but these men were too pioneering and too pressured to accomodate him. Spratt could not escape the destiny of his age and his place in history, and he felt this acutely. Those early years called for qualities much in addition to the theoretical, intellectual, or purely inventive. What we learn from the aeronautical career of George Spratt, and what he eventually learned about himself, is the extent to which the Wrights possessed those qualities as no one else did. This perhaps should not lessen him so much as elevate one's appreciation of the quiet brothers from whom he became so violently estranged.

George A. Spratt died on November 26, 1934, almost twelve years to the day from his last recorded communication with Orville Wright.

OCTAVE CHANUTE

Octave Alexandre Chanute was an almost obligatory touchstone for any aviation experimenter or theorist at the turn of the century. His "Progress in Flying Machines" (1894) had placed him in this position, as well as his reputation for encouraging any and all persons, almost regardless of training or background, who showed some semblance of practical talent. For many years he was a major source of moral and even financial support for George Spratt, to take just one example. His open approach and receptivity had ushered him into some very troublesome working relationships with young men who almost by self-selection were inclined to be dreamers, non-conformists, or idiosyncratic schemers. By nature a tolerant man and a peacemaker with his eye on the larger historical perspective rather than on immediate personality issues, he had by 1900 cultivated a sense of detachment from the personalities in the field even as he involved himself in their work. It took the Wright brothers, especially Wilbur, who was very much like Chanute himself in intellectual style, moral values, and practical orientation towards technology, to involve Chanute in a deep and personal relationship.

Chanute was born in Paris on February 18, 1832, the oldest of three sons born in quick succession to 36 year-old Joseph Chanut and 21 year-old Elise Sophie Debonnaire Chanut. (Octave added the final "e" to his name years later to make American pronounciation easier and, no small matter, to prevent schoolboy teasing about "chat nu" or "naked cat".) Joseph was an academician and writer, author of a well-known text on French history, and romantic in his approach to life and to his career. Elise seems, on the other hand, to have come from a propertied, conventional class, and looked to the older Joseph with the expectation of a comfortable, bourgeois life in fin de siecle Paris. The marriage was not a good match. On June 5, 1835

Joseph and Elise were legally and acrimoniously separated, their marriage having lasted four years, one month, and sixteen days. Their youngest son Leon was born ten days after the separation, which never led to an official divorce and entailed virtually a lifetime of enmity, innuendo, and haggling over property. There is some suggestion that Joseph was reluctant to deal with issues of property division which would have attended legal divorce, and thus his embittere wife remained womewhat under his domain according to French law for the remainder of her long life. Joseph took custody of his oldest son Octave, while Leon and the middle son Emile went with their mother.

Wishing perhaps for a new start or to escape the unpleasantness of the separation Joseph left France with six year-old Octave in 1838 and sailed from LeHavre to New Orleans where he took a position as vice-president of a new state-supported school in Jouisiana, Jefferson College. There is no record of young Octave's reaction to being so dramatically parted from his mother and brothers, but this loss may have been at least partially responsible for the intensely loving bond which developed between him and his father.

Joseph was quite protective of his son in the new and perhaps rougher environs of the Mississippi Delta port of New Orleans. Octave was not allowed to play with other boys and thus never learned the usual childhood games and sports. That he was not allowed to play with other boys at this time may well have been a significant factor in his developing a seemingly unaccountable desire to go gliding and camping with much younger men in the latter decades of his life. In New Orleans his isolation was complete, apart from the tutoring he received, and he spoke only French or Spanish until about age 11 when he learned English. He never learned much American slang and in later years his daughters would be amused when he came home from work asking them what a "four Flusher" was. He never learned card games or gambling, and had no taste for them, or knowledge of the idioms they spawned.

In 1842, when Octave was 10 years old, fire destroyed much of Jefferson College. Louisiana was unwilling to make funds available to restore the loss. Joseph again had to look to his future but was able to get by for four more years tutoring and writing.

In 1844 there was a momentous reunion when Elise and Octave's two brothers came to visit. The purpose of the visit was unclear - to see her son would have been sufficient motivation for Elise, one supposes. If there was any hope of eliciting from Joseph either a desire to reunite or a desire to formally divorce, neither bore fruit. The visit was brief considering the conditions and the distance travelled, and in a few weeks Elise sailed for France with Leon and Emile. Once again, the irrational and selfish interests of adults had separated Octave from his mother, and he must have felt miserable as he watched the ship floating away from the dock and growing small on the open water. It would have been unusual also for him not to have felt some jealousy at the younger brothers who were able to sail off with the prize that was always so distant, and his by priority of birthright.

In 1846 Joseph and Octave boarded a train - it may have been Octave's first train ride - bound for New York, and Octave watched the miles of rail measuring out with methodical irreversibility the fading of hopes for further reunion with Elise and his brothers. In New York Joseph made a living as a translator, tutor and author while Octave attended boarding school and negotiated the hazards of his first contacts with large groups of boys.

Octave made an excellent adjustment to the pace and values of American life, giving testimony to his social sensitivity, his endurance, his ability to befriend persons of dissimilar background, and his general intelligence and "political" skill. Perhaps in reaction to his father's disappointment

in academics and a perception that this line of work might have been partially at fault for ungluing the family, Octave struck out on his own in the field of engineering. This profession had evolved rapidly with the rise of industrialism and the machine age and grew to new heights of respectability and challenge as machines such as steam engines, railways, telegraphs, and the like came more and more to alter the course of daily life for people. It was in a sense "the thing to do" for an ambitious and intelligent young man impatient for extensive academic training.[102] A handful of colleges or universities offered formal curricula in engineering at the time, but such preparation was not regarded as necessary for entry into the field.

Having survived with impressive independence and self-assurance a somewhat unhappy childhood, mitigated largely by his father's devotion and love, 17 year-old Octave apprenticed himself to the Chief Engineer of the Hudson River Railroad who, having initially turned Octave down, called him back when he remembered that this was the industrious-looking young man he had recently seen ~~studying~~ repairing a globe while riding home with his father. The Chief offered him a position for no pay as chainman on a surveying crew, the lowest position anyone could occupy in the company. The Chief's judgement proved sound, and soon Octave was put on the payroll for the sum of $1.12½ per day. Within four years he had worked his way up to "division engineer in charge of terminal facilities and maintenance of way at Albany."[103] A seasoned railroad engineer at the age of twenty-one, the precocious and determined Chanute then moved west to supervise track-laying operations for a number of Midwestern railroads. He was conscientious to a fault, and one of his daughters later recalled that he walked over every last foot of track ever laid under his supervision, making sure that all had been constructed with the utmost care.

Chanute was in many ways a classic example of the "Go West, Young Man"

spirit of late 19th-century America. While still working his way up the ranks of the Hudson River Railroad, 18 year-old Octave had written to his father in Hyde Park about his dreams and his philosophy of life as Joseph prepared to leave New York and return to France for good:

"My Dear Father,

I have exactly the same opinion as you have about the part played by energy and perseverence in achieving success. However, I often wonder how this happens when I change to see about me so many young men filled with energy and talent, having many more chances of success than I have, and still they are not any further advanced than I. There must be a "screw loose" somewhere, some unknown circumstance that prevented them from becoming wealthy. I can see only one reason - it is not how wealthy a man is,but rather how clever, how cunning. Moreover, circumstances are all important; they elevate men of little wealth and hold back many of talent. All one can do is to meet them with fortitude; if favorable, they make you a wealthy man; if you are not, it was a waste of time, that's all.

Although I hope to become wealthy in a certain, or rather an uncertain, number of years, I do not think that making money should be the sole goal a person should have. Money is only precious because of the pleasure it can get for us. Why should one give up these pleasures for 20 or 30 years in order to buy them at great cost later when he cannot enjoy them any more? There is nothing I admire more than thrift but there is nothing I despise more than avarice. Consequently, I believe that the only way to achieve happiness is to save all one can but without depriving oneself of the many pleasures of one's age and position. Moreover, a man should work until he is twenty (in his twenties?) years old and then retire with independent means. As far as I am concerned, I would be glad if I could attain this goal at 30 (in my thirties?). But I will do what I can.

The life that seems to be my fate cannot be too happy since it means that we shall be separated for years, that I shall not see you for a long time, that the ocean will remain between us. It is very hard to find myself alone among strangers and to be constantly changing location. One cannot find real happiness away from one's own family. But since we must part, let us do it bravely. And since we must be separated, perhaps it is better for you to be in Paris. This region has nothing to offer; the future lies in the west or in the South. If I must be away from you, you will be better off in France, where your interests and sympathies lie. Because I am young, indubitably I will not feel my isolation with as much bitterness as you do, but will do my best. I am going to work very hard to that in a few years I will be able to join you with a small fortune.

I thank you very much for your letters. Although I wish I could do it, I will not be able to come down Thursday. It is near the first of the year and I had better postpone the trip to New York. However, I may

talk to the "chief" about it on the twelfth. Do write in any case.

Good-bye, my dear father, I am kissing you very tenderly,

Your affectionate son,

Octave C."[104]

Here we see the young Chanute's concerns with making his fortune in the world and with maneuvering through the odd Darwinian maze of opportunity and chance that has always been the American social fabric. We also see some moral concern over the zest with which he is ready to enter into this system, and the need to rationalize his fortune seeking (it will help reunite him to his father) and balance somehow the value of money against the value of the "good life". Chanute achieves the typical upper-middle-class compromise of money-as-a-means-to-a-higher-end, and he seems somewhat apologetic to his academic and unpropertied father for what he regards as his "fate" - to be at work for good money on an enterprise of unquestioned practicality and usefulness. It is clear that Chanute will be a successful man, but not a rapacious entrepreneur. He will have a sense of fairness and a social conscience of a high order. He will not be a reformer but a decent pragmatist. Somewhere in the heavens, as yet awaiting conception, was a soul named Wilbur of almost identical bent.

Additionally in this letter we can infer that Octave bore well any resentment over his father's early overprotectiveness or any role Octave may have felt his father played in separating him from his mother. He was able to realize a separate but loving peace with his parents and embark on an independent path with no bitterness or insecurity. This was a psychological achievement of remarkable maturity.

In the early 1850's there was a surge of westward migration in America, with settlers virtually pouring into Midwestern and Plains states to take

advantage of government lands, often expropriated at gunpoint from Indians and sold at "dirt cheap" prices of about $1.25 per acre. This land rush accelerated the railroad business and carried Octave to a position of substantial success and fortune. In April 1854 he was naturalized as a U.S. citizen, and in that year as well Leon and Emile left their Mother and came to New Orleans where Leon sought work as an architect and Emile as a bookkeeper. The next year Leon died of yellow fever, and in 1858 47 year old Elise Sophie moved to New Orleans to join Emile and his wife, of whom she would later remark to Octave:

> "His wife and her family I regard as being possessed of evil spirits; I think they have "hexed" him. She will never make any sacrifice for him and they are all like so many leeches, bleeding him to death on the pretense that too much blood is bad for him. She makes him believe that he is under an obligation to her and that they are taking away from the greater part of his money for his own good..."[105]

Elise's concerns for the remainder of her life centered on the ebb and flow of property between relations, and the seeking of a warm climate for her comfort and "health". Her better intentions to maintain responsible or consistent contact with Octave and Emile and their families always collapsed under the weight of personal preoccupations and even a certain vain selfishness. Sometime around the outbreak of the American Civil War she returned to France, always to feel a small pain that she could not afford to live in the city itself ("It is like Fairyland", she told Octave), and a larger pain that Octave would not move to a warm climate to suit her convenience and make it possible for her to live with him. To her last days she found it difficult to compromise her comforts and could only understand Octave's unwillingness to bend his life to her whim in terms of his lack of memory of her as a nurturing figure to whom he rightly owed something. "I regret every day", she said, "that you cannot remember where we lived before your voyage across the ocean, with my little courtyard."[106] She died at her home in Ivry, outside Paris,

on October 6, 1893, aged nearly 82 years.

Joseph himself had returned to Paris in late 1850 or early 1851 and remained there until uremic poisoning brought on by a kick in the kidneys by a horse on a Paris street killed him in 1869, age 73.

Sometime in the mid-1850's Octave met Annie James, daughter of a family with roots in the Virginia "aristocracy", then living in Peoria Illinois. (Privately, Chanute, like many educated European immigrants always regarded American pretense to aristocratic status as ridiculous and saw it as a contradiction of professed American ideals.) During their courtship Chanute took uncharacteristic pains with his appearance, as his daughter Alice later recalled:

> "My mother has often told me that at that time he was quite a dandy and wore wonderful waistcoats with jewelled buttons. I can only credit it as coming from my mother. There was certainly no evidence of it in after life, as I knew him. Though he was always immaculately neat he abhorred jewelry of any kind and we would have to drive him to the tailor's every Spring and Autumn."[107]

Octave and Annie had six children, 2 boys and 4 girls. The firstborn was Joseph Arthur Chanute, on February 6, 1858. Grandfather Joseph in Paris wrote Annie twelve days after the birth an effusively affectionate letter, motivated perhaps in part by the disappointment he had experienced in his own marriage and by some sense of relief and happiness that his closest son now had a family of his own.

> "Dear, Dear Annie,
>
> I have just received a letter from Octave, and the happy news of your home. Pray, excuse me, if long ago I did not write to you as promised; but in this gay, brilliant, and charming Paris for the wealthy, the battle of life is sometimes hard for other people, and for a long time, my mind, my time have been engrossed by care and literary labors.
>
> I have been moved to tears by what Octave says of you. He says that every day, from month to month, he has to congratulate himself at having won your regard and affection, and that every day he feels

more happy. You are so kind, so affectionate, and so industrious, that really it is a wonder, or rather a new motive to love you more and more if possible, and to make you more happy.

How much I feel happy myself, as well as grateful to you, for such news of your home! In what manner can I express my warm thanks and admiration! Really, a virtuous and lovely wife like you is an angel for the happiness of those within the family circle. If ever it is my lot to be admitted to it, it will by my constant wish, as well as earnest duty, to prove for you the best friend, the most attentive companion, the most affectionate father.

Do you know, dear Annie, that today, the 18th, is the birth day of our dear Octave? He is now 26 years old. If this time, no notice has been taken of the day, pray, celebrate the day on the 18th of next month. I will be with you in heart and mind, and later I will tell you what I thought and felt.

When you have read this too short note, dear Annie, give on my account a long, most affectionate kiss to Octave, and for your own gratification as many, as long as you like, or are accustomed to give.

Adieu, adieu, dear Annie, my darling daughter; my eyes are filled with tears, when I tell you how much I love and admire you.

Be happy!

J. Chanut"[108]

A daughter Alice was born in 1859; another daughter Gertrude Debonnaire in 1862 died in infancy; and a third daughter Elizabeth arrived in 1864. Having allowed himself sufficient bejewelled romanticism to engage Annie in matrimony, Chanute quickly settled back into his railroad work and devoted himself both to this and to the task of raising a stable and unbreakable family. In 1867, the year of Wilbur Wright's birth, the Chanutes left Peoria for Kansas City where they moved into an old colonial house on a large property overlooking the Missouri River. In this house a second son, Charles Debonnaire, was born on October 13, 1867, and from the front window Octave could look out over the River and see the steel and stone forms of a bridge taking shape. It was his bridge - the first bridge to span the Missouri River - and he had the job of supervising its construction. He did this work

with customary thoroughness. He checked with local Indians to learn the history of flood levels over the the past decades before any white man had settled there, built his bridge to the appropriate height, and later enjoyed the reputation of having designed the only bridge over the Missouri that did not wash out in floods. He treated the Indians with a tact and kindness that would become one of his hallmarks as a supervisor and a community leader. They were often employed as laborers on the construction project, and he invited them home on several occasions for a meal in his kitchen. When the bridge was completed, they presented him with the gift of a buffalo calf, which he accepted graciously and then took to the butcher's.

He was a man who, in some contrast to his own parents, placed the stability of his home and the responsibilities of parentage above all else, though he did not see this as incompatible with devoting virtually all of his time to his work. Daughter Alice recalled,

> "... I cannot remember that he showed us much attention when we were children but we all adored him above any other being. He never asked for blind obedience but always explained why he told us to do anything. I cannot remember any punishment at his hands but recall that my older brother was severely reproved and punished for throwing a snowball at me, not because I was his sister but because he did not show proper respect to a girl. He was quite fastidious in this, and always insisted upon putting on his coat if his wife or daughters went into the library to speak to him while he was writing in his shirtsleeves..."

In addition to the rather stiff properties of the times, Chanute drilled into his children the decent morality of the frontier - to be truthful, thrifty, honest, humble, and generous with one's son own material possessions. With this latter he was unusually determined that the acquisition of things not become the family's guiding light:

> "He tried to teach us generosity in our youth by having us give to other children. I sometimes thought it hard that I was obliged to give away some cherished possession. He was more successful though in teaching us to hate a lie. We regarded it as a crime and would have nothing to do with anyone whom we ever suspected was untruthful. When

> we took a letter to post for anyone we were told by him never to look at the name or address on it as that was not an honorable thing to do. Neither were we allowed to throw away a scrap of paper on which anything was printed or written. My father hated to throw away even an advertisement for which he had no use. He would ask each one of us if we wanted it and when he found out that we did not he would put it on his table and sometimes keep it for weeks trying to find someone to whom it might be useful.
>
> In very cold weather when the ground was frozen and particularly after a snowstorm he would tell us to throw out crumbs for the poor little sparrows. He never forgot them but fed them every winter up to the time of his death.
>
> ...He never could accept a word of praise, even in his own family. If we thanked him for anything that he had done for us he would always say "It was your mother who told me to do it - thank her."[109]

During the Missouri River bridge construction, Chanute was simultaneously employed as a railroad engineer. In 1869 the bridge was finished and in that year Chanute's father died from his accident. With the vast distance, Joseph was buried before Octave learned of his death. A young man, an acquaintance of Joseph, had taken care of the funeral arrangements and Octave would forever feel indebted to him for having done so. Many years later, when the man wrote repeatedly to Chanute requesting a "pension" in return for what he had done, Octave quietly responded on each occasion with some offering.

In 1871, the year of Orville Wright's birth, Chanute again augmented his railroad work with a massive endeavor of great community importance. He designed and supervised the building of the Union stockyards in Kansas City, and then in Chicago, to accomodate the wave of beef rolling methodically in on boxcars from Texas and Oklahoma. This wiped out the short-lived "cowboy" cattle drives and catapulted Chanute into national prominence both as an engineer and as a civic leader.

The last of his children, daughter Annie, was born on February 4, 1871, and two years later her father resigned his position with the Leavenworth, Lawrence, and Galveston Railroad - the L.L.&G. - to join the Erie Railroad

in New York. He would stay with the Erie for the next ten years. His decision was greeted by a spontaneous and universal protest in virtually every Midwestern newspaper, with deep regret that a man of his stature was to be lost to the East. Here are some samples from the deluge of praise that rained upon his departure.

> "Col. Chanute is a gentleman in every respect - his word is a bond. He says nothing but what he means, and means just what he says... Success to the man of brains." (The Leavenworth Daily Times, March 6, 1873)
>
> "We are not overburdened with such men as Co. Chanute. We could better spare a whole barn-yard full of politicians than one such man as Chanute. He is still a young man comparatively, and as modest as he is brilliant." (The Southern Kansas Sun, March 15, 1873)
>
> "His impartial and liberal manner of conducting the business pertaining to the road made him a universal favorite, and many grievances were buried through his wise management without becoming public... When the Erie road gained Col. Chanute, Kansas lost her ablest Engineer, and one of her best and strongest men." (The Southern Kansas Sun, June 21, 1873)
>
> "With the most unfeigned and rare modesty so characteristic, Mr. Chanute has ever shrunk from publicity and notoriety, and preferred the quiet seclusion of his office and study, where unobserved and undisturbed he could work and plan the many projects well known by their never failing success. Possessing this keen sense of forbearance in everything pertaining to his advancement, he has scrupulously refrained from soliciting the slightest promotion, but his merit becoming so widely and favorably known from his work, the most prominent and lucrative positions have been offered him and declined... The employees under him, when they learn of his resignation, will, with one accord feel the greatest regret at losing a just friend and protector of their rights." (The Kansas City Journal, March 5, 1873)[110]

At a dinner given in his honor by the managers and executives of the L.L.&G., Chanute, "the man of brains", was presented with the gift of several collections of finely bound books, including novels, biographies, and scientific texts, totalling in 1870's dollars the goodly value of $317. Soon after, Kansas named a town "Chanute" after him.

In New York Chanute continued his hard-working drive for community acclaim and standing by taking on the project of consulting to New York City on a proposed rapid transit system. He scrupulously did all this work at night so

as not to interfere with his regular duties with the Erie Railroad. His work habits were sometimes cause for mortification of daughter Alice, then in her mid-twenties, who recalled a night at the theater:

> "As I remember my father in New York between the years of 1872 until 1883 he was always working, even at the dinner table which was the only time we usually saw him ... The only time he was at home in the evening he would go from the dinner table to his desk and write far into the night on the Rapid Transit problem. He found time occasionally to take me to the theater as he said to point out to me the difference between good and poor acting. He considered the French school of acting far superior to anything that we had in America and whenever a French company of actors came to New York he would take me to see them and discuss with me the merits of the different actors. Even here though he would bring out of his pocket the inevitable pencil and paper, and be lost to all of his surroundings, which used to mortify me as I thought that all of the audience had their eyes on him. I used to beg him to put the paper back in his pocket and look at the stage. He must have thought me very foolish but as he was very considerate of everyone's feelings he would put up the paper and look at the play for a time and then forget and draw it out again."[111]

Most of the time Chanute's sensitivity for others' feelings was more attentive:

> "Once when I was about fifteen and expecting friends to visit me I was much mortified to find that the clean curtains which had been put up in the drawing room had shrunk in the cleaning, and did not reach the floor by several inches. I appealed to my mother but she only laughed at me and I was much ridiculed by the other members of the family, except my father, who consoled me and immediately ordered other curtains so that all was in readiness when my friends arrived."[112]

During this time Chanute began to take an ever-widening role in national professional organizations such as the American Society of Civil Engineers and the American Association for the Advancement of Science. The politics, pressure, and sheer overwork of the rapid-transit consultation exhausted him, however, and in 1875 he took a four-month vacation with his family to Europe. He surely saw his mother and visited his father's grave on this trip, but we have no record of this or any mention of his parents. What we do know is that he returned to America indelibly impressed by the seriousness with which Europeans were treating the subject of human flight. There were formal and informal communities of trained engineers in England and on the Continent

who not only speculated about flight but, as Chanute could appreciate, worked on it in a practical, level-headed, scientific way - an engineering way. On this visit began Chanute's secret hopes of emulating the Europeans in applying the power and organization of the new profession of engineering to this last great transportation problem of the nineteenth century. With such a project, play became respectable.

During the 1880's while Chanute's dreams incubated, his livelihood thrived on a business of preserving the wooden ties anchoring railroad tracks in place, and by 1890 his own Chicago-based company was a leader in the tie-preserving business. He had returned to the Midwest after successful completion of the Rapid Transit consulting work in New York, having evidently missed the relative peace and straightforwardness of the Midwest. Additionally, the Midwest, Western, and Far West markets for tie preservation were more open, and his wife's family was still in Illinois. Economic freedom allowed Chanute increasing time for the avocation of aeronautics. In this he was not only as ambitious and enterprising as he had always been, but was also as sensitive to public opinion and the judgement of his peers. He therefore approached the subject of human flight with some gingerness, realizing that for all Europe's precedents, American engineers were overwhelmingly skeptical of flight as a realizable goal. They were still far too preoccupied with the conquering of a large land mass and the joinging of their oceanic boundaries through steamships, railways, and transatlantic cables to be much impressed or challenged by the short downhill hops of European gliders.

Chanute determined to present the subject in as traditional and "professional" manner as possible, much as one would have to do today to legitimize any discussion of, say, extraterrestrial life, or extrasensory perception. As vice-president of the Association for the Advancement of Science he organized from

behind the scenes a lecture on flight at the Association's 1885 meeting in Buffalo, and in 1892 he was instrumental in coordinating, with Albert Zahm, a young graduate student in engineering at Johns Hopkins University, an aeronautical presentation at the World's Fair (world's Columbian Exposition) in Chicago. (Orville and Wilbur also went to this Fair, though their father, who accompanied them, may well have been more interested in an exhibit of all the world's religions. The two young brothers had as yet not given a thought to any aeronautic experimentation.) By 1894 Chanute's exhaustive and accurate "Progress in Flying Machines" had cemented him firmly as the leading authority in America on the subject of aviation research, and also as the man most able to gather and disseminate information on the subject both in the U.S. and in France. In the early 1900's he was the man who, by relaying to frustrated experimenters data about the accomplishments of "two bicycle makers from Dayton", was responsible for breathing life back into the failing European interest in human flight. This resuscitation cost him his trust and very nearly his friendship with the Wrights and became the basis in later years of claims that the Wrights had no foundation for patent suits in Europe since their secrets had been revealed there by Chanute before they filed for patent.

Conscious of the ridicule risked by himself and by the engineering profession if it failed to be sufficiently sober in its presentation of the problem of flight and regressed to the days of bat-winged hayloft jumpers, Chanute took pains to place the issue well within the bounds of established engineering methodology. Flight was not a mystical phenomenon, but one potentially understandable in terms of physical laws. He therefore took a hypertechnical approach to the problem, preferring at the World's Fair mathematical and pragmatic papers on very specific problems rather than

theoretical papers or treatises claiming to have already "solved" the mystery. To unveil some bird-like wooden hull with mechanically flapping wings and silk feathers attached for lightness was the emphatic opposite of what Chanute wished to do. He was always more than willing to enter into discussion of minute details concerning lift, drift, glide angle, frame resistance, head resistance, aspect ratio, wing curvature, center of pressure, and the like, and over the years his committment to this manner of approach took on the dimensions of a myopic passion. It allowed him, for instance, to continue into 1908 and 1909 an ornate technical correspondence with George Spratt, long after the Wrights had indeed "solved" the puzzle of manned flight. (For all his efforts to understand Spratt's writings, Chanute would often become hopelessly exasperated with his fuzzy thinking. Typical of his reactions to Spratt's style was the following: "I got about half way through... when I had to lay it down to attend to personal affairs of importance, and the manuscript has been ever since grimacing on my desk as a disagreeable task."[113] But at the time Chanute's cautious approach persuaded many talented men to take up the investigation in a serious way. Samuel Langley attended the 1885 meeting in Buffalo of the AAAS. Thus did Chanute slowly and carefully steer the engineering profession towards the reputable study of manned flight - a service for which he was uniquely suited at his age and level of prestige, and for which the profession must forever be indebted to him.

At the same time, the less "professional" but potentially useful gliding experiments of Otto Lilienthal and his brother Gustav in Germany, and the marine engineer Percy Pilcher in England, offered a means of testing the properties of various wing shapes and configurations that the engineers might devise. Lilienthal had emulators both inside and outside the engineering fraternity, and Chanute felt he might unite his technical expertise to the

gliding skills of these "aeronauts" to solve the riddle of flight. It was for this reason that he conducted his own gliding experiments in collaboration with Augustus Herring, Edward Huffaker, William Avery and a Russian immigrant named Butusov on the shores of Lake Michigan in 1896, and why he responded readily to Wilbur's written overtures in 1900.

Chanute was at the rather lofty pinnacle of a distinguished career when Wilbur wrote to him. He was a senior engineer, an internationally renowned authority on aeronautic history, an officer in prestigious national organizations, and a man convinced that the diligent and persistent application of traditional engineering skill would slowly move man in deliberate increments toward success. For reasons both personal and politic, he eschewed any notion of a quick breakthrough in the field and sought instead to cross-fertilize all the ideas sent to him and generated by him. Already sated on fame and fortune, he pursued aviation as something of a serious hobby not to be confused with making a living, and he held at arm's length from his own emotions the possibility that powered flight would be achieved by himself. At his age - he was 68 in 1900 - he was receptive to the idea that younger men ("alter egos", as he once said to Spratt) could test gliders of his design, and while he carefully nurtured their own theories and plans he was more convinced that his own analysis of the problem was correct and would in the end unlock the door through which these younger men could fly. As late as 1909 he was unable to comprehend, even as he watched, that two men from Dayton, Ohio had not only ignored his door but had flown over and away from it in a quantum leap unimaginable to the older, deliberate engineer.

Sometime in mid-May, 1900 Octave Chanute received in Chicago a pale blue envelope with the letterhead "Wright Cycle Company". One could sympathize if a certain weariness overcame as the purpose of the writer, a small-town

mechanic, became clear in the opening lines:

> "For some years I have been afflicted with the belief that flight is possible to man. My disease has increased in severity and I feel that it will soon cost me an increased amount in such a way that I can devote my entire time for a few months to experiment in this field..."

But it soon became evident that this Wilbur Wright was not a crank, and had apparently researched the field, including Chanute's work, prior to writing. He described his plans and attitudes in a way that placed him squarely in agreement with Chanute:

> "... My object is to learn to what extent similar plans have been tested and found to be failures, and also to obtain such suggestions as your great knowledge and experience might enable you to give me. I make no secret of my plans for the reason that I believe no financial profit will accrue to the inventor of the first flying machine, and that only those who are willing to give as well as receive suggestions can hope to link their name with the honor of the discovery. The problem is too great for one man alone and unaided to solve in secret..."[114]

This was Chanute's position, which Wilbur no doubt ascertained from his reading of Chanute's books and papers. One questions whether Wilbur in his heart felt wholly that this was true, but at the time, and starting from scratch, it was probably a very reasonable position to take. When Wilbur began he had no idea of the mountain of problems that would confront him and Orville, nor did he ever imagine how quickly they would be able to scale that mountain. To place himself in the fraternity of Chanute-associated experimenters was the best way to enter the field, or so it appeared.

Why in the first place did Wilbur such contact with Chanute? In some general way, as suggested above, he wished to "get in the game", but what specifically did he expect from such contact? Did he wish to profit from Chanute's knowledge? Did he wish funds or publicity? Did he need the psychological support of the older man? Some of these questions are easy to answer. With regard to financial support, Wilbur and Orville were unique

among the younger men in Chanute's acquaintance in that they insisted from the start and maintained throughout the relationship an absolute financial independence. This was not only a matter of pride and honor with them, but it was also a deliberate strategy after a time to insure against the possibility that others might in the future claim to have assisted them and thereby claim a portion of their success. Not only did they refuse Chanute's own funds, but they also turned aside his offer in December, 1901 to solicit sums of $10,000 and more for their work from Andrew Carnegie.[115] And as far as publicity was concerned, the Wrights almost always preferred privacy to publicity. In fact their conflicts with Chanute over this issue were a principal cause of the deterioration of their friendship with him over the years. They neither wished nor sought nor trusted publicity generated by others.

The questions of psychological support and technical advice are more germane. How much did the Wrights owe to Chanute for the success of their efforts? That is perhaps a question better answered by aeronautical engineers and historians, but in general terms it appears the concensus of these experts is that Chanute's direct technical counsel was of far less importance than his knowledge of what others were doing in aviation, thereby giving the Wrights some idea of how far ahead they were of their competition, and less important than his value as a sounding board, allowing Wilbur to hammer and discipline his ideas into a written historical record in the form of his correspondence with Chanute. Documentation of the Wrights' work through such correspondence was in fact a conscious intent of the author of "Progress in Flying Machines". Additionally, Chanute's encyclopedic familiarity with past and current research made him a ready reference source when needed, not for new ideas but for their historical context. On balance, Chanute's technical knowledge aided the Wrights much as a library aids a student writing a paper, or a laboratory aids

a researcher. His contribution was valuable, but not causal of the actual accomplishment. It lay somewhere in between moral support and consultation, being not merely the former but not quite the latter.

From the beginning of their relationship, Chanute's direct advice went largely unheeded by the Wrights, even after they had sought it. In August 1900, prior to the brothers' first trip to Kitty Hawk, Wilbur wrote to Chanute asking where he could obtain some spruce for his full-sized glider, and how he might varnish the cloth covering over the wind ribs.[116] Yet the actual glider was eventually constructed of white pine and ash, and the cloth wings were never varnished or "doped".[117] Wilbur's initial plan to lay prone upon his glider and have it rise in a stiff headwind on the end of a rope, like a kite, was discouraged by Chanute since his review of others' efforts to do this had revealed it to be a very unsteady practice and not a good means of evaluating the effectiveness of a craft. Yet Wilbur did it anyway until he found out quickly that Chanute's precautions were to be wisely followed in this instance. This is not to say that the Wrights simply disregarded Chanute's advice - the use of white pine, for instance, was not by design but necessitated by the absence of spruce on the Eastern shore - but rather that they were possessed of an independent spirit of ingenuity and invention which liberated them from dependence on anyone's advice.

At various other points throughout the decade 1900-1910 Chanute provided the Wrights with wind measuring instruments, pertinent journal articles, and information about other experimenters and their progress. There can be no question that they were recipients of Chanute's generosity, and that there was a genuine friendship between them. Yet one can find little evidence that any of his voluminous and carefully prepared technical data, or his gifts, affected directly the design or construction of the Wrights' main discoveries

in the areas of three-dimensional control, propeller design and theory, and tables of lift coefficients. The principal exception would be the double-decked wing configuration trussed like a bridge for rigid support, and later dubbed the "Chanute-Herring" glider after its successful tests near Lake Michigan by Herring and Avery in 1896. Yet the concept of multiple-wing configurations was not new, as Chanute would have been the first to point out, and did in 1908[118] and even Chanute abandoned this design after 1896 in favor of far more complex gliders as he pursued the difficult engineering goal of automatic stability in the performance of his craft.

We are left wondering whether Wilbur needed the psychological support of a mentor as he began an effort with a most unsure future, or whether as later relatives of Chanute would suspect, he cynically fostered a relationship with Chanute to capitalize on the latter's connections for publicity and fame. These questions prove to be quite interesting indeed.

There is little of record to suggest a need for a mentor in Wilbur's life at this time, and the only statement by him as to why he contacted Chanute came years later after disputes over Chanute's contribution to the Wrights' achievement had soured their relationship. "We invited Mr. Chanute to visit our camp each year," Wilbur told a journalist in 1909, "in order that we might not be without a trustworthy witness of our performance."[119] This was certainly a reasonable motive, though it tends to support a somewhat cynical interpretation of what was a rather more rich and involved relationship between the two men, and Wilbur's stating of it was in the context of anger at a reporter who printed his amazement that the Wrights had not yet acknowledged their indebtedness to the man (Chanute) who had obviously generated all their ideas and designs. Samuel Langley had invited Alexander Graham Bell aboard his launching houseboat on the lower Potomac in January

1894 for just such purposes, that a scientifically credible man of senior standing might affirm any success in the launching of his scaled-down, steam-powered models. Bell even served as timekeeper for Langley's model launches over a year later in 1895, and then as photographer in 1896. And, as happened several years later with Chanute and the Wrights, the witness Bell pushed eagerly to fulfill his function in publicizing the event while the inventor Langley, on the brink of success, developed mixed feelings about premature publicity, wishing to hold out longer for more solid indications of practical achievement. (The difference was that in this case Bell won, overcoming without too much of a struggle the resistances of Samuel Langley's ego.)[120]

But in the very beginning - in May, 1900 - Wilbur was certainly not in need of any witnesses, and his later statement to that effect seems to have had the rather vindictive motive of slighting Chanute. And even if Wilbur anticipated such a need in the future, that motive alone cannot explain the more than dozen letters which passed between them before the year was out, and then 60 more in 1901, 63 in 1902, 50 in 1903, and so on through the Huffman prairie years of 1904-1905, and the contract negotiation year of 1906. Clearly something beyond the manipulation of Chanute into the role of witness lay behind such a degree of involvement.

The Chanute relationship was to a great extent Wilbur's doing rather than Orville's. And since he said little of his motives or what the relationship meant to him, we must make our own best inferences.

In the early Kitty Hawk years of 1900-1901 Wilbur was a man in great need of someone's stamp of approval. He was more self-controlled and circumspect than his future friend George Spratt, but he was nonetheless quite unsure of the legitimacy of his enterprise and his own qualifications to undertake it. He had never gone to college, and had completed only a couple of extra post-high

school courses in Greek and trigonometry. His public education had been excellent and his self-education remarkable, and his intelligence was surely superior. Yet he lacked the formal credentials which might make others take him seriously and which could usher him into the inner sanctum of his contemporary aeronautical enthusiasts. He was perhaps particularly self-conscious about his lack of explicit scientific or engineering training of an advanced kind. This, I think, largely explains his early zest for the trading of gliding data and minutiae with Chanute.

Wilbur had bounced back from his 1885-1895 decade of introverted study and support of his parents in their troubles and illness, and he was in a quietly determined sense out to prove himself and establish his own occupational identity. For years he had appended himself to Orville's industriousness, first in printing and then in bicycles, and it meant a great deal to him that respectable, experienced people like Chanute might consider his thoughts and plans worthy of attention. His first letter was therefore an introduction of himself to the perceived "keeper of the gate" in aeronautical research, as well as an attempt to impress Chanute with his pragmatic approach to the problem.

Whatever weariness Chanute might have felt in the beginning of Wilbur's letter appears to have eased as he read through it. He ignored, perhaps out of understandably conditioned skepticism, much of the valuable innovation in Wilbur's ideas - most notably the notion of warping the wings into varying angles to produce relative lifts on each side, thereby controlling lateral balance - and offered instead reference to the previous work of other investigators which Chanute regarded as having some bearing on Wilbur's proposals. He generously extended an invitation to further correspondence and even a personal visit by Wilbur to Chanute's Chicago home, to which Wilbur replied with his customary sensitivity to the burdens of older folks:

> "When next I am in Chicago I shall without doubt accept your kind invitation to see you personally, and till that time, while I shall not inflict upon you a voluminous correspondence about mere theories and untried experiments, I will be pleased to communicate any information I may consider of value, and shall be pleased to have the benefit of your advice when my plans are fully matured."[121]

Wilbur had now received, sight unseen, his initial acceptance into the flying fraternity, such as it was in 1900. One suspects that the positive response from Chanute was not only welcome encouragement as he set off alone from home (for the first time in his life) to Kitty Hawk in mid-September, 1900, but also afforded some additional motivation to bring back some results and persevere in the harsh conditions on the shore.

When he and Orville, who later joined him at Kitty Hawk, returned to Dayton in November, Wilbur wrote a lengthy description of their glides over the dunes, comparing their results to those which Herring had somewhat immodestly published concerning his glider in 1897.[122] Chanute's response was warm and enthusiastic, and contained a seemingly harmless request which was in fact the first sign of what would become a major problem for the Wrights.

> "I thank you much for your letter of 16th which I have found deeply interesting, and I congratulate you heartily on your success in diminishing the resistance of the framing and demonstrating that the horizontal position for the operator is not as unsafe as I believed.
>
> I shall hope to meet you, either here or at Dayton, to obtain further details, and to compare calculations of lift and resistances. If your machine is not irrevealable I should much like to see it.
>
> I have lately been asked to prepare an article for "Cassier's" magazine, and I should like your permission to allude to your experiments in such brief and guarded way as you may indicate.
>
> I need scarcely add that I shall expect with impatience the further letter which you announce."[123]

Here then in embryonic form was the "Chanutian" dilemma for Wilbur - the ever-present conflict between his need to share with Chanute and his discomfort over the latter's broader need to publicize as much of the Wrights' work as possible. This dillema was a most difficult one for Wilbur. He valued the encourage-

ment of the older man; indeed, it must have been quite heart-warming for him after so many years of secluded self-doubt and occupational indecision. Yet only six months after his first letter to Chanute and before he had even met him, Wilbur found himself being pushed uncomfortably out on center stage with the rest of Chanute's younger associates. One can imagine his ambivalence. Having committed himself in writing to Chanute's mission of sharing information among professional peers so that the cause of flight might take precedence over individual ambition, Wilbut could not refuse Chanute's offer. And it was undoubtedly heady stuff for Wilbur and Orville to be mentioned in a national magazine after only one brief season of experimenting. But for the first time he realized that Chanute's knowledge of their work might cut both ways, through the protective privacy which they instinctively felt about their theories, and in benefit of their continued confidence and pride. Chanute had politely referred to his awareness of their desire for privacy concerning a potentially patentable control system, and was perhaps a bit disappointed when his newest young aeronaut replied three days later,

> "It is not our intention to make a close secret of our machine, but at the same time, inasmuch as we have not yet had opportunity to test the full possibilities of our methods, we wish to be the first to give them such test. We will gladly give you for your own information anything you may wish to know, but for the present would not wish any publication in detail of the methods of operation or construction of the machine."[124]

In other words, the Wrights would insist on being in control of any publicity surrounding their work, but Chanute would be privy on a confidential basis to any information he wished. As if to emphasize his own openness in matters of publicity as opposed to the attitude he felt to be taking shape in Dayton, Chanute sent the Wrights a partial draft of his article "covering <u>all</u> that I have said about my own experiments, and what I have just added about yours. ...the detailed accounts to be published by yourselves."[125] Implicit also in this message was Chanute's sensitivity to the Wrights' wishes, which he would nevertheless

pressure gently and ceaselessly for modification over the next several years.

It was only a glimmer of a difference between them and it was rather quickly buried in the coming months under an active, fact-oriented exchange of data and ideas between Wilbur and Chanute. In all his correspondence following the 1900 Kitty Hawk trip, Wilbur referred to "we" rather than "I" when he discussed aeronautics. By this he meant, of course, Orville, who was indeed far more involved with Wilbur as a theorizer and "colleague" than Chanute, and whose unique intellectual and emotional union with his brother will be the subject of a later chapter. One merely has to keep in mind at this point that while the initial need to contact Chanute was largely Wilbur's, the correspondence which resulted was the product of both brothers' thinking, and expressed through Wilbur's pen.

Correspondence continued through 1901, and in late June (26 & 27) Chanute visited the Wright home on Hawthorne Street in Dayton, and met the brothers and their family. (It was at this dinner that Carrie Kaylor committed the faux pas for which she feared never being forgiven, by Katharine of dividing one good dessert melon in equal parts rather than giving larger portions of the good one to the guest and portions of the unripe one to the rest of the household.) Chanute went straight to Chuckey City, Tennessee when he left Dayton, as he wished to check on a glider that Edward Huffaker was building for him. It had apparently been Chanute's wish to recreate the excitement of his Lake Michigan experiments in 1896, using the same sort of "team" approach with machines of varying design that had guided his earlier activities with young "aeronauts". He wished to capitalize on the opportunity to congregate a few healthier and abler bodies around the subject of gliding and have them try out his own gliders as well as their own, if they wished. He had discussed this possibility with Orville and Wilbur during his visit, but saved

the particulars of his proposal for a letter two days after his departure:

> "1. I will send Mr. Huffaker and his machine to your testing grounds at my expense, and pay his share of camp expenses.
>
> 2. He will assist you in your experiments, in exchange for your assistance in testing his machine. The latter I expect to be brief (Chanute apparently did not think much of Huffaker's workmanship).
>
> 3. If you think you will want more assistance, I will also offer to Mr. Spratt (the young man in Pennsylvania who is anxious to see experiments) to send him down at my expense to serve under your orders..."[126]

Here was another dilemma for the self-sufficient Wrights. In contacting Chanute it is doubtful that Wilbur anticipated forced company on the Outer Banks. He and Orville were more than equal to the task of their experiments, with the strong-backed help of some "Kitty Hawkers" they hired on a seasonal basis. Moreover, they had surveyed fairly thoroughly others' work, including Chanute's attempt to build automatic stability into a glider rather than trust pilot controls, and they were sure that they would not profit anything but inconvenience and delay by associating with other experimenters on an active basis. This would not, as Chanute believed, lead to maximal fertilization by letting a hundred flowers bloom; rather, it would lead to confusion and waste which would eat up days of the precious few weeks per year they were able to get away from the bicycle trade to conduct their experiments.

Nevertheless, they acceded to Chanute's request, neither expressing pleasure at his proposal nor rejecting it outright, but merely hoping that it would be worth the expense to Chanute. The ambivalence seems to have by-passed Chanute's enthusiasm, and when he assured the Wrights of the reliability of Huffaker and Spratt, Wilbur took pains to express his fears tactfully:

> "We note what you say in regard to the discretion and reliability of Messr.'s Huffaker and Spratt. We have felt no uneasiness on this point, as we do not think the class of people who are interested in aeronautics (note the value to Wilbur of the professional association with aeronautics) would naturally be of a character to act unfairly.

> The labors of others have been of great benefit to us in obtaining an understanding of the subject and have been suggestive and stimulating. We would be pleased if our labors should be of similar benefit to others. We of course would not wish our ideas and methods appropriated bodily, but if our work suggests ideas to others which they can work out on a different line and reach better results than we do, we will try hard not to feel jealous or that we have been robbed in any way."[127]

Chanute's insistence rolled over the Wrights' ambivalence, clearing the way for their meeting on the dunes with Spratt and Huffaker. Chanute spent a week in camp, from August 4 through the 11, and wrote back from Chicago on the 19th, "Please take plenty of snapshots. You will want them to illustrate whatever you write."[128] He also told them to cut holes in their wing surfaces to improve stability, a suggestion which they ignored. Probably Chanute had planned things carefully all along, for on August 29, he asked Wilbur to deliver a lecture with slides on his gliding experiments before a meeting of the Western Society of Engineers in Chicago on September 18. Wilbur again felt uncomfortably pressured - he was almost painfully shy in the first place, and particularly if there would be ladies in the audience - but was "nagged" into acceptance by his sister Katharine and probably by Orville as well, who lent him his good clothes for the occasion. Wilbur and Orville had been so discouraged at the results of the 1901 season at Kitty Hawk that they spoke barely a word to one another on the way home to Dayton. Wilbur roused himself on the train long enough to declare in frustration that never in a thousand years would man learn to fly. On their arrival, Katharine felt the gloom and saw the invitation from Chanute as a way to lift the spirits and rejuvenate some enthusiasm around Hawthorne Street. As for Chanute, he appears to have had such an invitation in mind even while he was in camp, or before, and would have not doubt have invited Wilbur to speak regardless of the latter's mood. The result of the address, an uplifting of the Wrights'

spirits, was therefore not, as is often suggested, the deliberate intent of Chanute's invitation but rather a happy accident. But his introduction of Wilbur Wright, and by inference Orville, to the professional world of engineering was no accident, nor did Wilbur give him any reason for regret or embarrassment. The Society made the occasion, on September 18, 1901, "ladies night", and though nervous on this account ("... I will already be as badly scared as it is possible for a man to be, so that the presence of ladies will make little difference to me, provided I am not expected to appear in full dress, etc."[129], his lecture entitled "Some Aeronautical Experiments" was a huge success and was printed in the December 1901 issue of the Society's Journal.

If there had been any loose strings in the fabric of Wilbur's occupational self-confidence, this appearance tightened them nicely. Wilbur even considered going on the lecture circuit until he learned that the general public's interest in his subject would not allow a fee high enough to justify the effort. He instead entered into a winter of research with his brother, constructing a wind-tunnel to measure precisely what he and Chanute had been discussing back and forth in endless detail - the reliability of Lilienthal's tables of lift coefficients. The major reason for disappointment at Kitty Hawk the previous season had been that the Wright glider, constructed in conformity with the pioneer Lilienthal's data on ideal wing curvature, simply had not performed as the tables predicted. If their whole data base was in error, they would have to go back and do basic, fundamental research before constructing any more machines. The very acknowledgement of this reality was in effect a major step forward for the science of aeronautics, for here they departed from Chanute's preference for "natural" wind conditions and embarked on a more controlled study of the phenomenon of wing lift. They were not the first in history to build a wind tunnel - Wenham had done so in England years earlier.

But they were the first to appreciate the degree to which small, even minute, differences could alter the performance of airfoils, and therefore they were the first to create a truly accurate data base for practical experimentation. The idea of warping the wings for lateral control had, in the summer of 1899, been their first major step forward. Their second was the adoption of the horizontal position on the glider. The third, in the Fall and Winter of 1901-1902, was the creation in their home-made wind tunnel of the world's first accurate aerodynamic data base. Yet Chanute was reluctant to part with his past notion of Lilienthal's accuracy, demonstrating his understandably large psychological committment to aviation's past:

> "Your recent improvements in gliding machines have disturbed by belief in coefficients which I thought well-established, and I desire to settle the matter in my mind before I again put it in abeyance."[130]

During this time it was beginning to become obvious that the Wrights were leaving Chanute behind as far as his capacity to consult was concerned. He did, however, serve as a conduit for information about other investigators, and though the conduit undoubtedly flowed both ways, Chanute was generally respectful of privacy in the matter of hard data. On November 12, 1901 he sent the Wrights some material Langley had mailed to him on request, even though Langley had marked it "confidential". Chanute interpreted this liberally to mean "not for publication", but one feels certain that the rather secretive Secretary would not have wished anything shared with other investigators. Chanute's liberalism was here more convenient than correct, yet his fervent belief in cross-fertilization - in getting others to overcome personal interests in the cause of a higher unity; in getting them to share rather than to divide - was deep-seated, and though he took pains not to alienate or anger others by his dissemination of information, in the end his need to bring others together whether they wished it or not got the better of him.

Moreover, his role as author of "Progress in Flying Machines" had gotten him rather used to the idea that his perspective was broader, and therefore better, than anyone else's, and that history was better served by his judgements than by the short-sighted and personal decisions made by those working on what he always considered only one or the other aspect of the problem. In this particular instance, the Wrights did not profit from what they learned of Langley's work. But they were comforted by their assessment of how far ahead they were.

Actually, Chanute courted the Wrights rather carefully in these early years, showering them with books and offers of assistance and, as in the above incident, fostering the feeling that they were in a special alliance with him. His own young "alter ego's" - Herring, Huffaker and Spratt - were poor matches for his own style of working. Not the least of their faults was that none seemed likely to succeed. But the Wrights were solid, sober, logical, dedicated without distraction, even-tempered, and thorough in both thought and craftsmanship. Chanute saw their star rising and he identified with it. If his name hitched to their star helped it to rise any faster, he was no less pleased to have such men as his friends. Perhaps Wilbur as well felt that the Wright ascension would be more widely noticed in the glow of Chanute's acquaintance. At any rate, it was a happy marriage of mutual ambition, mutual respect, mutual friendship, and a remarkable compatibility in habits and values. "Please excuse the inordinate length of several of my letters," wrote Wilbur to Chanute in the Fall of 1901, "I sometimes fail to consider that your time is more valuable than my own."[131] Chanute responded with as much affection as he ever allowed anyone outside his own family. "I am amused with your apology for writing long letters, as I find them always too brief."[132]

It was on receipt of the positive results of the Wrights' wind-tunnel studies that Chanute offered to intercede on their behalf with Andrew Carnegie. He had been dismayed to hear that their work would have to cease while they prepared for the upcoming bicycle season, but he agreed with their frankly courageous decision to maintain aeronautics as a sideline to their regular business. As Wilbur explained in his refusal of a grant,

> "... of course, nothing would give me greater pleasure than to devote my entire time to scientific investigations; and a salary of ten or twenty thousand a year would be no insuperable objection, but I think it possible that Andrew is too hardheaded a Scotchman to become interested in such a visionary pursuit as flying. But to discuss the matter more seriously, I will say that several times in the years that are past I have had thoughts of a scientific career, but the lack of suitable opening, and the knowledge that I had no special preparation in any particular line, kept me from entertaining the idea very seriously. I do not think it would be wise for me to accept help in carrying our present investigations further, unless it was with the intention of cutting loose from business entirely, and taking up a different line of lifework. There are limits to the neglect that business will endure, and a little pay for the time spent in neglecting it would only increase the neglect, without bringing in enough to offset the damage resulting from a wrecked business. So, while I would give serious consideration to a chance to enter upon a new line of work, I would not think it wise to make outside work too pronounced a feature of a business life. Pay for such outside work would tend to increase the danger. The kindness of your offers to assist, however, is very much appreciated by us."[133]

Chanute also wished that the Wrights would publish their wind-tunnel test results, and Wilbur and Orville found themselves in a similar position to Langley's when Chanute had requested his data a few months earlier. Wilbur put off this latest dissemination effort by Chanute on the thin excuse that "Although I have great confidence myself in their substantial accuracy, yet there comes the haunting thought that all previous experimenters in this line have made mistakes and that though we avoided or corrected ninety-nine sources of error there may be one that has escaped our attention."[134] They eventually gave Chanute the data, as well as a detailed description of their measuring device, on provision that he not publicize it.

At this time Chanute also inquired as to the Wrights' interest in a proposed aeronautical "contest" and exhibition in St. Louis planned for 1903-1904. Such an exhibit would of course be concerned at this point not so much with flying machines (no such machine had yet been invented), but with gliders, kites, and various forms of steam and gas power. There was much talk of money and wealthy sponsors, and the whole thing had an exhibitionistic pressure to it that tended to repell rather than attract the Wrights. As Wilbur confessed to Chanute, "This injection of the mercenery idea into the flying problem is really a nuisance in some respects."[135] But the proposition gave him a ready excuse for further delay in publishing what Chanute correctly judged to be highly valuable wind tunnel data, "... as it would be hardly advisable to make public information which might assist others to carry off the prize from us."

As a man with an international reputation to uphold, and with unique qualifications to serve as a kind of American liaison figure to French aeronautical enthusiasts, Chanute was under some pressure to stay on top of recent developments and to provide the Europeans with further information on the two brothers who were widely perceived in Europe to be Chanute's students or pupils - the craftsmen for his own ideas. Chanute had not at this point attempted in any explicit way to portray the Wrights as his students, but neither had he gone out of his way to correct the perhaps understandable assumption that this was in fact the nature of the Wrights' connection to this senior authority. Chanute was regarded, in Europe and eventually in some American circles as well, as the director, creator, and "brains" behind all the Wrights' accomplishments. This perception was reinforced, albeit indirectly, when Chanute became the person to write to for reprints of Wilbur's address before the Western Society of Engineers.

Therefor when a German military officer - Major Hermann Moedebeck, author of a standard table of life coefficients - pressured Chanute for an update on current research in America, Chanute in turn pressured the Wrights for permission to release their data. Though it was not said explicitly, Chanute was no doubt concerned with appearing as though he indeed had ready access to such information and really was still the leading authority in this country. In this respect the Wrights were a constant source of potential embarrassment and tension for him, since they were so notoriously avoidant of what he himself sought - publicity. Chanute was by this time, of course, aware of the difficulty in extracting information from Dayton, and offered to compromise by giving Moedebeck data on just two of the Wrights' many wing models, test surfaces #10 and #15. Wilbur was cautious as usual, and found a way out:

> "As to the policy of publishing two of our measurements of surfaces, you must decide for yourself. We consent, but otherwise give no advice. However, if any are published, they should preferably be #12 & #17. If we give anything, we should give our best, so as not to mislead other workers; and besides, #12 is nearest to what Lilienthal recommended in profile and depth of curvature."[136]

In other words, having found Lilienthal's data wanting (this was the reason for the wind tunnel tests in the first place), they were willing to offer Lilienthal's old data for public consumption rather than specify the more accurate information which was now available. Chanute sent Moedebeck an article for publication and simply omitted all the hard data he had requested from the wrights.

Chanute's European connections were beginning to take a very active interest in the Wrights, thanks in large part to Chanute's advertising of their work. The stalled and discouraged French pursuit of aeronautics began to show signs of renewal, and in February, 1902 Chanute received an animated letter from Captain Ferdinand Ferber, an artillery officer stationed at Nice, stating his admiration for the Wrights and recounting his own experiences with a Lilienthal

glider on the rocky hills around his military post. Ferber's intent was merely to "convey his felicitations", though in a year's time he would request to practice with the Wrights on the Outer Banks, and even to purchase a glider - "du type Wright".

Yet for all his familiarity with the brothers' work, Chanute doggedly pursued his own course of investigation, generally disregarding their thoughts on control systems and concentrating instead on their aerfoil and glide data. The problem in brief was as follows. Lilienthal had led the way in using glider flights as the model method of investigation, but his control in the air depended almost entirely on his being able to swing his legs and lower body from side to side and fore and aft under the wings to correct for gusts and other imbalances in the air. The glider had basically been strapped around the shoulders and torso, and the "pilot" thus coasted downhill in a kind of winged harness. Two factors were inadequately understood - first, the complex center-of-pressure travel on curved surfaces (i.e., at what point under the wing was the lifting force concentrated at any given moment, how quickly and in what direction did it shift, and how did these things vary with wind conditions and the sizes and shapes of various wings); and second, the control of the craft in the air, which meant three-dimensional control - up and down, left and right, and side-to-side (pitch, yaw, and roll). Failure to understand these things had cost both Lilienthal and Pilcher their lives, and the safety-conscious Wrights therefore took pains to investigate both problems thoroughly before committing themselves to any great height in the air. With regard to the problem of control, they recognized that shifting the pilot's weight limited severely the size of a manageable glider, and concluded that the pilot, like a bird, must become skilled in responding to wind shifts and air currents. Thus they built into their machine a system of lateral control through varying the angle of each wing to the wind

(this was done by twisting the wings with a wire leading to a lever in the pilot's hand, and is nowadays done with ailerons - same principle, different implementation), while sideways and up-and-down motion was controlled through a movable rudder in the rear and an "elevator" or movable, small "wing" in the front of the glider. This elevator was in later Wright planes, and in most modern planes, moved to the rear for better control at high speeds, and is the horizontal wing-like section immediately below the rudder. Even today's huge jumbo jets and transports use the principles of control built into the 1903 Wright Flyer, and in some experimental planes the old forward elevator, or "canard", is making a comeback on the merits of its capacity to reduce stalling.

Chanute, however, like many of his contemporaries - Langley among them - believed that a human operator could not possibly respond to the vagaries of the winds with anything approaching the requisite speed and skill, and so he tried to design a glider that would automatically adjust its wings, through spring-loaded joints and other mechanical devices, to meet wind pressure changes without active pilot intervention. There was a sort of blind incomprehension on Chanute's part that three-dimensional control in the air was even that much of a basic necessity. Langley's models had been designed essentially for straight-line flight, though they wound up going around in wide arcs because the weak wings twisted in the air and presented in effect varying angles of incidence. Even Langley's huge Aerodrome was supposed simply to take off over the Potomac with poor Charles Manly aboard, with no capacity for turning, steering, or even landing! Such was the rush to get off the ground that steering was considered a secondary problem to be worked out after the main problem had been conquered.

Chanute's multiple-wing glider designs, at times resembling fantasy insects rather than airplanes (one of his constructions was dubbed "Katydid" during the 1896 Lake Michigan experiments), were hinged and sprung in various ways to

allow the layers of superimposed wings to rock back and forth automatically as the wind shifted, thus "spilling" their lift like a luffed sail when required. Building such mechanically elaborate craft within required weight specifications required considerable skill in metal work and carpentry, and this was yet another reason for Chanute's interest in the Wrights. He was forever in search of good workmanship for his designs.

Chanute took his ailing wife Annie to southern California for the winter of 1902 and there he contacted a well-known kite builder, Charles Lamson of Portland Maine, who was at the time running a jewelry and watch repair shop in Long Beach. Lamson's kites had achieved quite a reputation when on August 23, 1896, before a crowd of 15,000 in Portland his 30-foot kite weighing over 100 lbs. had pulled a 150 lb. dummy 600 feet into the air before snapping the towline and drifting sleepily back to earth. A year later, on July 11, 1897, Grace Gould, a reporter for the New York Journal, went aloft in one of Lamson's kites and wrote of her adventure to an excited public.[137]

Chanute paid Lamson to build for him a "folding gliding machine ...to test my proposed rocking surfaces", and bypassing the Wrights' ideas on control as well as their reasoning against an upright, standing pilot, he asked the Wrights as well to build a couple more gliders for him to test in the coming season (1902):

> "I also propose to rebuild my "multiple-wing" and my "two-surfaced", so as to have comparative tests when you go out again. Could you build these at my expense in your shop? I propose to keep the man upright."[138]

Wilbur's response suggested diplomatically that such comparison would be useful if only to convince Chanute to abandon his approach, and with equal tact he begged off his request that they, the Wrights, personally construct his gliders:

> "...I am glad that you intend to test some more machines during the coming season, and especially that you expect to send some down to be tried along with our machines. The comparison will quickly show what points are good and what are bad in the various machines compared, and assist greatly

in the designing of future machines.

> It is possible that we could take charge of the construction of one or more of the machines you contemplate building, when our busy season is over, if you so desire. We would doubtless have to commit the work to other hands but would give it our careful supervision. If you should desire to place the order with us it would be important to have the complete plans ready in time to enable us to have all the material ready before work is commenced as the workmen's time could be employed much ,ore economically in that case."[139]

In April 1902, Chanute's wife Annie died, and on May 5 he wrote Wilbur that "I am endeavoring to regain my mental poise."[140] Chanute was deeply affected by Annie's death, which not only rocked the domestic stability and familial sentiment he had worked so hard to establish under his own roof, but seemed also to resurrect some old anxieties about parting from loved ones. His daughter Alice recalled later that after Annie's death Chanute would wander about the house almost aimlessly "until he had found each one of us. He said he 'Just wished to see if we were there'. He disliked having us away from house and if we went out without him in the evening he could not sleep until he knew that we were safely at home."[141] There was virtually no sharing of feelings with the Wrights, however. All was science and business. By the middle of May he had regained sufficient poise to request from them, on Major Moedebeck's inquiry again, a "geometrical drawing" of their glider. Wilbur fed Chanute the usual half-loaf, promising to "make some attempt at it, though we make no pretense of being draughtsmen."[142]

At the end of May the quixotic Herring, out of work, out of funds, and out of favor with all possible donors, sought help from Chanute who, with the Wrights' ready permission, contracted out to him the construction of his gliders.

On May 30th, Chanute suggested that the Wrights patent their inventions, "not that money is to be made, but to save unpleasant disputes as to priority."[143] Here was the germ of yet another difference between them which would in time

become very bitter. But for the moment Wilbur did not address this issue, fearing perhaps that their plans, once on file with the federal government, would then not be safe from expropriation in the interests of national defense, or from pilferage by information seekers from other governments. Instead, Wilbur seemed alarmed that Chanute appeared to give the Wrights his new gliders, or worse, to have them test his machines personally in the air at Chanute's old glider site on Lake Michigan. Wilbur, always in the position of warding off Chanute's various advances and proposals without alienating him, thanked the older man profusely for his generosity but suggested that "Our use of the machines ought to be an incident rather than the primary purpose of their construction."[144] He offered to assist Chanute in finding a place near Chicago suitable for Herring to test the gliders he would make, and when Chanute visited the Wright home in Dayton on July 3 for his second time, the choice of who would do Chanute's experimenting was the topic of awkward conversation. Wilbur delayed an answer to Chanute's insistent invitation that it be the Wrights who would try out his new designs. Chanute had gone so far as to compromise his plans to test on Lake Michigan, and was now prepared to go to Kitty Hawk if that would make it easier for Wilbur and Orville.

After Chanute left Dayton, the brothers discussed the delicate problem, as they did not wish to be too obvious about their fear of being considered merely as Octave Chanute's "pupils" or "test pilots". Yet they were also resentful of his insistence and his pressure to open up their pleasantly isolated camp to his brand of "teamwork" experimentation. Chanute was not a man to be turned easily away from any goal.

On July 9, 1902, Wilbur wrote him, declining to test his machines on the grounds of safety (they would be unfamiliar with the gliders' construction), and in the interests of avoiding any accusations of saboutage should the Wright

performances on Chanute's gliders fail to meet or surpass those of Herring and Avery in 1896. Unfortunately, the alternative to doing it themselves would be to have a third party in camp. Said Wilbur of the 1901 season, "I was our experience last year that my brother and myself, while alone, or nearly so, could do more work in one week, than in two weeks after Mr. Huffaker's arrival."[145] The final compromise in this situation was one in which an expert of Chanute's choosing (Herring or Avery) would come to Kitty Hawk after the Wrights had finished setting up their own craft, at which point they would be freer to assist in setting up Chanute's gliders. Wilbur pushed for Avery.

> "Provided it is equally satisfactory to you, reasons not necessary to mention would lead to a preference for Mr. Avery in the choice of an expert. Mr. Spratt, should he consent to come down in response to our invitation, would be a very welcome addition to our camp at any time as we know him to be a willing worker and a most congenial companion."[146]

When Chanute responded five weeks later that Herring seemed the more likely choice, the reasons which Wilbur had found not necessary to mention became more urgent. He wrote from Kitty Hawk a week after their arrival on August 28, in a last ditch effort to alter Chanute's choice:

> "...In a former letter I expressed a preference for Mr. Avery because several things I had heard about Mr. Herring's relations with Mr. Langley and yourself seemed to me to indicate that he might be of a somewhat jealous disposition, and possibly inclined to claim for himself rather more credit than those with whom he might be working would be willing to allow. While I do not anticipate trouble for ourselves on this score, yet I thought that with Mr. Avery there would not be the same risk. If you should find it most convenient to send Mr. Herring it will be entirely satisfactory to us. If you are also in camp during the term that he is here I do not see how any misunderstanding could arise."[147]

Chanute took the hint, and on October 5, arrived in camp, Herring safely in tow.

The Fall of 1902, it could well be argued, was the perios in history when all the major problems of flight control were solved. Though there was no investogation as yet by the Wrights of propellers or of powered flight as such, their 1902 experiments convinced them that they had discovered and shaped wings of

optimum lift, and had mastered the art of three dimensional control in the air. Plenty of problems would greet them further down the road, but basically the general answers to the problems of gliding flight were obtained in that season on the shore. By October 3, before Chanute's arrival, they had hit upon the solution of a movable rather than fixed vertical rudder to prevent what they had come to call "well-digging", or sliding off the horizontal into a tailspin crash. The rudder was linked mechanically to the wing-warping mechanism, allowing for successful banked turns, and the superior wing design was carrying them farther than anyone had ever glided in America. All things considered, they were now the world's leaders in aeronautical engineering.

Chanute's gliders, by contrast, were inadequate to the point of embarrassment. One of them, constructed out of cardboard tubing for lightness, had crumpled into a sad heap during a rainstorm and was never tested. Chanute blamed Herring's poor worksmanship for the failures - "I fear he is a bungler", he wrote Langley on October 21[148], but Chanute himself had approved of Herring's products earlier and was perhaps casting about for an excuse. The Lamson-built machine was never tested - there is some indication that Herring would not entrust himself to it, or would not bother with something not of his own construction - and Herring left camp in the company of a disappointed and angry Chanute on October 14th. It was for all intents and purposes the end of their long association, and a sad finale for the patient Chanute, whose major error seems to have been an insistence that he could work his will on men whose individualistic natures were simply not that pliable, or that desirous of his guidance. Chanute wanted to tinker, to play, to experiment as a hobbyist, and he made it respectable by approaching it as an engineer. In a sense he saw himself as the older, rich kid on the block to whom all the others should feel

indebted and whose leadership and will should be followed as a matter of course. There were overlays, of course, of genuine ambition and intellectual interest. But for Chanute the problem of flight was not primarily a technical problem, but an opportunity to associate with other men in the spirit of playful adventure. The extent to which such fun was difficult for him can be measured in direct proportion to the engineering minutiae with which he disguised it. Yet, so compelling was his need for recreation that he overlooked almost completely the fairly obvious fact that his younger associates were not at all interested in hobbying on their off-hours - they were earnestly determined to conquer the air, and jealously competitive with one another over the privilege. He also tended to disregard the actual competence of those men, as if one could play with Spratt, or Herring, or Huffaker if Wilbur were not available. This interpretation of what flight meant to Chanute is perhaps a bit harsh, but it is nevertheless the only way I can reconcile his otherwise excellent technical and interpersonal judgement to the scenario of his dejected departure from Kitty Hawk in 1902, in the company of one of early aviations biggest egoists and schemers. The Lamson machine was left with the Wrights, who folded it up and stored it out of the way.

October had been a landmark month for the Wrights and for aviation. On October 23 Orville was able to his sister,

> "Day before yesterday we had a wind of 16 meters per second or about 30 miles per hour, and glided in it without any trouble. That was the highest wind a gliding machine was ever in, so that we now hold all the records! The largest machine we handled in any kind of weather, made the longest distance glide (American), the longest time in the air, the smallest angle of descent, and the highest wind!!! Well, I'll leave the rest of the "blow" till we get home."[149]

They arrived back in Dayton on Halloween, October 31, 1902, where they were met at the train station by their father. At this point it was clear to them that the problems so perplexing to Lilienthal had been solved. All that was needed was to mount an engine and propellers and they would be the first

into the air. The particulars were perhaps not quite so obvious to others, but thanks to Chanute (and to Herring, who went straight to the Smithsonian from Kitty Hawk, hoping that his new found knowledge might overcome Langley's dislike for him and gain him some new employment) others were convinced now more than ever that the Wrights had made some manner of remarkable progress. Actually, Langley had written to the Wrights at Kitty Hawk just prior to their leaving for home, and therefore after Herring's visit, asking if he might come to see their experiments or send a representative to do so on his behalf. He then wrote Chanute in the same vein, requesting some information on "the extraordinary results which you told me were recently obtained by the Wright brothers."[150] Chanute informed the Wrights of Langley's interest and Wilbur responded, aware of Langley's prior model experiments and his plans for a full-sized, powered machine, as well as of his secretive and competitive streak: "We replied that it would be scarcely possible (for Langley to visit Kitty Hawk) as we were intending to break camp in a few days. He made no mention of his experiments on the Potomac."[151]

By December 7, the imperious Langley, ever conscious of his position, had grown impatient with the impertinent bicycle mechanics and wrote Chanute that he would like to hear more about their system of control. He offered, through Chanute - an offer which Chanute thought "cheeky" - to have them visit Washington at his expense to speak with him about their ideas, "if they are willing to communicate them."[152] They were not, and did not visit the Smithsonian.

They did, however, take out patents on their control system, a decision which Chanute applauded even though later events would indicate he himself did not understand that system. Nonetheless, it was evident to him and certainly to the Wrights that they were not in the forefront of all investigators and were progressing with astonishingly rapid and methodical inevitability toward the

final goal of manned, powered flight. With equal and sad certitude, Chanute's days as an experimenter were over. His ideas had reached a dead end in October 1902. Not an unambitious man by any standard, he not doubt felt that now more than ever his own fame in aeronautics and his own acceptance into the winner's circle would come through intimate association with the Wrights.

On January 3, 1903 Chanute sailed with his daughters from Boston to Egypt for a four-month vacation in North Africa and Europe. Wilbur, who had never been anywhere in his adult life but Chicago and Kitty Hawk, wrote in one of his stiffer moments,

> "It has been a pleasure for us to learn that the matters you spoke of at Kitty Hawk have turned out so satisfactorily, and that you feel free to take the trip to Egypt. I do not doubt that you will enjoy it very much. It is a land of wondrous interest and the home of many remarkable birds whose evolutions will doubtless share your attention along with the pyramids, Thebes, and the great dam..."[153]

Wilbur continued to value his association with the worldly and well-educated Chanute. His own class and cultural ambitions were straining against the security of him Midwestern roots. As a model of an ideal career and life-style, Chanute had no peer in Wilbur's eyes, though his morality and character were mostly modeled after his own father. Having sought something of an apprenticeship-by-mail from Chanute, Wilbur found that what was of most value to him was not Chanute's technical information but rather his example of how to conduct a professional, scientific career. This was something his father, for all his virtues and strength of character, had been unable to provide. Chanute was, in the language of recent popularized notions of adult development, Wilbur's "mentor".

While Chanute was away, the Wrights spent many weeks inquiring of various manufacturers about a light and powerful gasoline engine for their new glider, which would be much larger and heavier than the 1902 model. No company could meet their specifications so they began work on their own, a difficult task

at a time when the gasoline motor was a primitive and unreliable affair. In addition, when they went to the library to pick up a book on marine propellers or "screws" they found no data that would be applicable to airplane propellers, and precious little on the marine props themselves. It seems that for years engineers had simply "cut and tried" marine props, finding that exact precision was not necessary in the forgiving heavy element of water. The air was not so forgiving, and the Wrights were forced to devise a theory of propeller thrust prior to what they had thought would be a simple job of constructing them.

Chanute kept in touch with the Wrights while he was away. While in France he was approached by Captain Ferber who wished to go to America to take lessons from the Wrights, and to purchase both the Wright 1902 glider and the Lamson-built Chanute machine. Chanute passed the request along to Dayton, where Wilbur sidestepped it in his usual polite fashion. Wilbur and Orville were at this time unaware of Chanute's other efforts in France on behalf of the cause of aviation. Traveling in his native land as a senior aeronautical expert, Chanute was vastly gratified by his reception, and pleased by the respect with which the French regarded his accomplishments. Yet he was perhaps dismayed - a feeling he could not communicate to the Wrights - that so little productive effort was being made in France. Ever eager to prod interest in the subject, he accepted an invitation to speak at an April 2 dinner meeting of the Aero Club de France on the topic of recent gliding experiments in the U.S. Needless to say, the Wrights' work formed a large part of Chanute's talk. He showed photographs of their glider in flight and detailed drawings of its construction. Whether he himself created the impression or not, many in the audience assumed that the ideas were his, and that the "bicycle makers of Dayton" were his understudies and mechanics. The Wrights' future perception that Chanute had fostered this impression (it is almost impossible to determine something so

subtle without actually having been there) was to be singularly erosive of their friendship. But for the French and for European aviation Chanute's speech was a veritable resuscitation. The "cause" of flight had triumphed over individual ambition, as Wilbur himself, we might remember, had wished when he first wrote Chanute.

Thus it was without any obvious sense of deception or disloyalty that Chanute delivered a transatlantic order to the brothers to "go to the photographer and 'be took', and send me two copies of each at Chicago," to accompany the text of his Aero Club speech which would be printed in the Club's journal, "L'Aerophile".[154] Unaware of the deatils of Chanute's text, aware nonetheless of his taste for publicity and community acclaim, aware of the danger of their being portrayed as his pupils, and aware of personally underwriting an activity which might invalidate future patent claims, the Wrights decided flatly to refuse photographs. But their communications to Chanute were not at all blunt. They gave numerous polite excuses over the next several weeks, while Chanute's insistence that he not be allowed on their account to disappoint the editor of L'Aerophile (or appear to be unable to get two simple pictures of men with whom he was allegedly so close) pushed the issue on for months to a stalemate in August, when Wilbur said finally, "Really, we would rather not."[155] Yet it would be a mistake to think that as yet there was any wide rift between the Wrights and Chanute. On June 2$\frac{4}{5}$, 1903 Wilbur gave his second speech before the Western Society of Engineers in Chicago, and like the first, it was an unqualified success. Its title was "Experiments and Observations in Soaring Flight", and there was no mention of motors or propellers. When a questionner following the speech asked Wilbur about any experiments along these lines, Wilbur announced simply, "We have not applied a motor to any of our machines. The driving force has been gravity."[156]

In all fairness to Chanute, Wilbur and Orville had made quite a change in their attitudes about success in aeronautics after the 1902 season. Their progress had surprised even them. Perhaps exposure to Herring and Huffaker had soured them on "the class of people who are interested in aeronautics", who Wilbur averred early in July 1901 would not be "of a character to act unfairly"[157]. Or perhaps the speed with which they had propelled themselves to the brink of success had justified a more ambitious bent towards fame and fortune. In any event they were stuck with, and no doubt embarrassed by, their previous disavowals to Chanute of monetary interest and secrecy, and they therefore made no direct effort to inform him of their change of heart. He was supposed to get the hint and didn't, and their avoidance of a confrontation over the issue allowed the feeling to grow that somehow their change of attitude had been in a less noble direction, a betrayal of idealism and science, a step towards narrow protectionism. Actually there was nothing whatsoever wrong in the Wrights seeking to gain profit by their invention, as they belatedly pointed out years later. However, the avoidance of an overt clash with Chanute gave the impression that they were somehow ashamed of this particular brand of motivation. Again, a central misunderstanding between the Wrights and Chanute over their respective motivations for being involved with flight led to this avoidance. The Wrights were forever exasperated that Chanute wouldn't catch on to their plans and cease his missionary dissemination of their work. And Chanute, encapsulated in his perception of flight as a form of elevated adult play-science, conducted in comaraderie by teams of sportsmen-engineers, could never accept that the Wrights might wish to turn his activity - his game, his cause - into a private business of almost wholly their own doing. His was the shock of a purist whose amateur friends suddenly turn professional, and thus his sole understanding of the Wrights' behavior in later years was the predictable one - they simply got ready.

But in the summer of 1903 these feelings were just barely perceptible. They came out in indirect ways - through Wilbur's sarcasm and through Chanute's insistence, for example, on pressuring Wilbur for computations of glides made in natural wind conditions despite the demonstrably superior value of controlled studies in wind tunnels. Such technical exchanges were the kind of intellectually sublimated science-play that Chanute enjoyed so much, and unfortunately he enjoyed too much the game he himself had composed on the Lake Michigan shores in 1896. That game was now obsolete. Orville and Wilbur had the new toy, and the exactness of the thing took all the fun out of things. The name of the game was no longer engineering minutiae, but the larger, grander synthesis of powered, manned, controlled flight. On one occasion when Wilbur complained that lift coefficient measurements taken in natural winds were often inaccurate by 50% or more, Chanute took the opportunity to disagree with him and received in return a report of calculations by Wilbur of Chanute's own data with the following sarcastic comment: "I am really a little rusty at figuring percents of error in such a case but, at a guess, say we put it at 100,000% - at any rate it is rather more than 50%." He also poked fun, perhaps a bit hypocritically, at Langley's exclusion of the Wrights from any knowledge of the upcoming trials of his Aerodrome. Alluding to Chanute's broad band of contacts - and perhaps divided allegiances - he wrote "I presume you are to be one of the guests of honor at the launching festivities. Our invitation has not yet arrived."[158] (Chanute's hadn't either.)

Wilbur's irritation also showed in reference to an article Chanute had written on the Wrights' work for the French journal "Revue des Sciences", which he submitted to them for review prior to publication. There were some minor numerical inaccuracies in the article, but what really bothered Wilbur was Chanute's misunderstanding of their system of controls. He wrote in

protest to Chanute, "And on page 14 it is stated that the tail is operated by 'twines leading to the hand of the aviator.' Really, this is news to me! Would it not be well to strike out that clause?"[159]

Chanute responded patiently to the increasingly irritable Wilbur, and told him of his dilemma - that wishing to communicate to the world what the Wrights were doing, as well as keep secret what they were doing, was placing him in a difficult position. The Wrights regarded this as a self-created dilemma not of their making, and they showed no sympathy. In so doing, they gave in to a narrowly accurate righteous feeling, but like their father had done before them in the U.B.C., they also passed up an opportunity to be more relaxedly compromising, communicative of their position, and politic towards an associate. Chanute swallowed his anger at this attitude, but when Wilbur implicitly undercut the computational basis for all of Chanute's work - the measurement of glides in natural wind conditions - he could not contain his hurt feelings. He complained about Wilbur's sarcasm and, in a July 27th letter, committed in a wholly innocent manner an unpardonable insult towards the Wrights' own work. He claimed that they had done nothing particularly new and had simply brought to fruition by virtue of their superior workmanship ideas and concepts ancient in origin.

> "I was puzzled by the way you put things in your former letter. You were sarcastic and I did not catch the idea that you feared that the description (of their work in Chanute's Revue des Sciences article) might forestall a patent. Now that I know it, I take pleasure in suppressing the passage altogether. I believe however that it would have proved quite harmless as the construction is ancient and well known.
>
> The use of the word "twine" was an inadvertence. I indicated on the manuscript that it should be translated by the word "cordelette" which means a line of any sort, and "line" is the proper word."[160]

The next day Chanute mailed to the Wrights a copy of a letter by Captain Ferber to Ernest Archdeacon, a wealthy Frenchman who underwrote much aeronautic research, exhorting his countrymen to renew their pursuit of aviation, for

"the aeroplane must not be allowed to be perfected in America..."[161] It was now clearer than ever that Chanute's publicity had brought competition to the Wrights. But it was not this which irritated them so much as the implication about their invention in Chanute's article. "The trouble was not that it gave away our secrets but that it attributed to us ancient methods which we do not use."[162] Not only was this insulting, but it would serve strongly, coming from so renowned an authority as Chanute, to undermine any Wright patent claims to originality.

Chanute's investment in history - he had written the only reliable history of this subject - had blinded him to the possibility that there might be anything new under the sun. The Wrights could have seen in this a built-in protection for their ideas, for how could a man who didn't understand what they were doing give anything away? But Chanute had in fact given away raw data, and regardless of his poor overall grasp of their work his opinions were influential in the aeronautical community, and the time saved by other investigators by not having to duplicate the Wrights' basic research would place them that much closer to success. Moreover, Wilbur was no doubt incensed at the sheer cognitive folly of Chanute's blindness - the man simply did not see the right - and the stage was set for another trial of the righteous.

Civility yet prevailed, however, as Wilbur extended an invitation for Chanute to visit the Kitty Hawk camp in the Fall of 1903. It is now that one begins to believe Wilbur's motivation in wishing merely to have Chanute there as a reliable - or rather, believable - witness. For his part, Chanute continued to court the Wrights, offering to the always-prepared brothers some dishes and cups for their camp use. Wilbur refused them with thanks.

Wilbur and Orville reached camp on September 25, 1903, their goods having narrowly escaped destruction in a warehouse fire in Elizabeth City, North

Carolina on September 16th. On October 7, Chanute wrote, saying there was some chance he would not be in camp that season. His railroad tie preserving business was in a minor crisis due to a flurry of possible contracts, and an attack of typhoid in one of his managers. He also included a newspaper clipping announcing Langley's first failure on October 7 to have his over-powered, flimsy, and immaculately polished Aerodrome jerked into the air over the Potomac. A Congressional investigation was likely, said the clipping, though Langley was attributing the failure to a stuck launching mechanism and not the craft itself, and he wanted a second chance. Wilbur wrote Chanute in reply, "... I see that Langley has had his fling, and failed. It seems to be our turn to throw now, and I wonder what our luck will be. We will still hope to see you before we break camp."[163]

By November 5 the "whopper flying machine", as one of Lorin's children (Milton, or "Whackers") had named it, was ready for engine testing. In contrast to the lightweight gliders of 1900, 1901, and 1902, this craft with a man aboard weighed over 700 pounds and had a total wing area of 510 square feet. It also merited a characteristically unromantic and practical name - the Flyer. Its width from wing tip to wing tip was just over 40 feet (with 4 inches more wing on the right side to offset the weight of the engine, which was mounted just to the right of the operator.) Their progress in flying machines had indeed been rapid in the space of four years.

Spratt arrived on the 23rd of October, and soon began work on the single rail, 60 feet in length, of metal-topped two-by-fours joined in four sections (the "Junction Railroad", they called it) that would serve as the Flyer's launching track. This was the most tangible contribution Spratt made to the Wrights' work, apart from his pleasant company in camp, and he finished it on November 4th. Chanute arrived on the 6th, just as Spratt left, having felt

the need to assure his welcome by writing two weeks earlier, "Do not hesitate to say so if you would rather not have me come..."[164]

On November 10th rain kept the three men in their shed all day where Chanute proposed somewhat pitiably, as he sat upon the very threshold of successful flight, that the Wrights operate in the coming year his oscillating-wing machine (the one Lamson had built), that they perfect an impossible construction of the Frenchman Clement Ader's design which Chanute was trying to buy, and that they exhibit Chanute's own machines along with Ader's at his expense at the 1904 St. Louis exposition. The record of how the brothers managed to dodge this proposition is lost forever to the sands of Kitty Hawk, but their reaction, whatever it was, did not exclude their bargaining with Chanute over how he might help them should their Flyer get off the ground. Chanute was asked to give their performance all possible publicity while keeping the construction of the machine secret.[165] Chanute left Kitty Hawk on November 12th before any flights could begin, however, and he sent back to camp as he passed through Manteo two unsolicited pairs of gloves for Wilbur and Orville, as the weather was growing increasingly cold to be clutching levers and tools with bare hands. It was a touching and a thoughtful gesture.

In a sense it is hard not to feel some sadness about this cold and rainy scene on the dunes. Huddling together on the frostbitten lip of the Carolina coast, sheltered only by the bare boards of their shed, the two imminent conquerors of the skies talk quietly with the seventy-one-year-old author of "Progress in Flying Machines", the man who wrought the first bridge over the Missouri River. A moment of potentially rich intimacy hardens in the catalyst of misperceptions into a bartering of ambitions, and the old gentleman walks away in the dreary November winds as little more than a publicity agent for the next generation. Hoping nevertheless for an

acknowledgement which righteousness and factual accuracy will never allow, he sends back a pair of gloves for each of the hopefuls. Aeronautical history will never show it, but who is to say that warm hands around the open levers on December 17th did not contribute to successful flight?

On December 8th Langley's overpowered dreams slid into the river for the second and last time, nearly drowning the unlucky pilot Charles Manly. Nine days later the Wrights made four successful flights, becoming the first in history to do so, and relegating a whole era of experimental gliding to the museum halls of aviation. Chanute telegraphed his congratulations and stood humbly ready for his new duties: "When ready to make public please advise me."[166] The Wrights ignored his telegram, ans so he tried again, on December 27th, with a suggestion that they lecture on their experiments before the American Association for the Advancement of Science in St. Louis the following week. It was a formula that had worked before to bring the Wrights out of hiding, but now the circumstances were different. Wilbur's reply was a curt telegram: "We are giving no pictures nor descriptions of machine or methods at present."[167] Wilbur wrote on the same day a lengthy but non-technical letter to Chanute describing the four flights, but it was clear that he was not to be entrusted any more with specifics. Even the issue of which brother had flown first (Orville) was concealed, Wilbur saying only that "Orville and I alternated in the flights according to our usual custom."[168]

Chanute was not to be that easily jettisoned from the Wrights' risen star, however, He bent himself to the Wrights' wishes as he had bent himself to the idiosyncracies of so many other young men over the past decade, and resigned himself without true acceptance or understanding of their need for secrecy. This need was not anything particularly mysterious or even complicated. It was quite simply related to the Wrights' plans to market their invention and

then monopolize the market, and to their desire to be granted full credit for what they had done from a scientific and engineering point of view. But Chanute was confused by this secrecy. Not only did it not jive with Wilbur's repeated devaluation of financial motives in the past and his apparent dedication to helping the cause on all fronts, but it also made no technical sense to Chanute who, failing to grasp the uniqueness of what the Wrights had accomplished, could not grasp their motives for wishing to keep it secret. As Orville complained to his father and sister from Kitty Hawk, "He (Chanute) doesn't seem to think our machines are so much superior as the manner in which we handle them. We are of just the reverse opinion."[169]

The Wrights' concerns over competing claims became more understandable when, the day after Christmas, they received a letter from Augustus Herring, demanding one-third of an interest in any company they might form, and threatening lawsuits if they did not by so doing acknowledge his contribution to their success. The Wrights ignored this "effrontery" and "rascality" by Herring, and when Chanute heard of it he offered his assistance to them if Herring should undertake some legal suit against them.

But at this moment Chanute was less offended by Herring than by the Wrights themselves, who had sent him a copy of their January 5, 1904 statement to the Associated Press. The last paragraph of that press release had said:

> "From the beginning we have employed entirely new principles of control; and as all the experiments have been conducted at our own expense without assistance from any individual or institution, we do not feel ready at present to give out any pictures or detailed description of the machine."[170]

Chanute was understandably hurt by that statement, as he had still not accepted the Wrights' transition from compatriots in the flying fraternity of Chanute to independent inventors wishing fame and fortune in all the usual competitive contexts. One had to appreciate the radicalness of their discoveries to be

willing to concede to them this measure of independent self-sufficiency and credit. Without such awareness, their behavior looked like what Chanute believed it to be - greed and selfishness, fame gone to the head. "Please write me," Chanute asked, "just what you had in mind concerning myself when you framed that sentence in that way."[171] Wilbur responded to the question in a way that suggested his own feelings had been offended equally by others, including Chanute. It was an answer wanting in any evident empathy for the elderly man's wish to be remembered as helpful and contributory to the final success: the purpose of the statement had been

> "to make it clear that we stood on quite different ground from Professor Langley, and were entirely justified in refusing to make our discoveries public property at this time. We had paid the freight, and had a right to do as we pleased. The use of the word "any", which you underscored, grew out of the fact that we found from articles in both foreign and American papers, and even in correspondence, that there was a somewhat general impression that our Kitty Hawk experiments had not been carried on at our own expense, etc. We thought it might save some embarrassment to correct this promptly."[172]

If Chanute were expecting some acknowledgement by the Wrights of his help, moral, material, or otherwise, he was disappointed. They were not magnanimous in their triumph, and they did not reach out with the brush of victory to paint their associates and friends. Very few were ever allowed to get close enough even to imagine that they might be caught in the glow surrounding the tight Wright family bond. "We had paid the freight", said Wilbur with coldly truthful simplicity, "and had a right to do as we pleased."

It is a credit to his maturity - if such a word can be used in a 72 year old man - wisdom might be better - that Chanute immediately dropped any further effort to solicit from the Wrights some clarification of his contribution. It was clear enough that none would be forthcoming. Yet at the same time Chanute wished to maintain the connection, and banked on the idea that they would find his business and political connections useful in their government

contract negotiations and in their patent applications for the Flyer. He dropped his proposal to have them exhibit his gliders at the St. Louis Exposition of 1904, and instead encouraged them to enter their own invention. (Chanute, incidentally, was to be one of the judges at the exhibit, which would feature "airships", or blimps, gliders, kites, and of course, the surprise of a powered machine if the Wrights entered.) Orville and Wilbur planned to do this, and much of the correspondence with Chanute in 1904 centered on the Exposition, which would be held from July to October. The enterprise proved to be a general failure, however, even though there were some entrants, as the conditions for winning the prize money were too exacting, the money itself was not worth the effort to some, and an internationally famous airship operator, the flashy Alberto Santos-Dumont from Paris, withdrew before exhibiting when his blimp was vandalized in a St. Louis warehouse. The Wrights never bothered to enter.

A second large part of the Chanute-Wright communication at this time concerned the aeronautic and chauvinistic hornets' nest which Chanute's April 1903 Aero Club speech had disturbed in France. Chanute took pains to appear very much on the Wrights' "side" in this matter, as it took on more and more the dimensions of a "we-they" proprietary battle over aviation. Wishing as ever that the flow of publicity would sweep him into the winner's circle along with the winner, he prodded Wilbur and Orville gently but unsuccessfully to compete for the prizes being offered as incentives to proud Frenchmen to beat the Americans. Moreover, there was a widespread suspicion in France which lasted until Wilbur's undeniable flights at LeMans in 1908 that the Wright claim to have flown in 1903, and then in 1904, was a hoax, that the Wrights were mere "bluffeurs."

But neither prizes nor pride would budge the brothers from their 1904-5 work to perfect the controllability and reliability of their plane and its engine. Chanute contented himself with a general correspondence about persons

of mutual acquaintance, the goings-on in France, the status of the St. Louis Expo, and as 1905 drew to a close, the Wrights' attempts to negotiate a deal with the American, British, or French governments. Wilbur kept him informed of progress on the Flyer, but was nonspecific about details of construction and principles of operation. This was not simply because they did not trust Chanute's judgement concerning publicity, but more fundamentally because they no longer regarded him as capable of understanding what they were doing. They believed that his advanced age had adversely affected him on both fronts, though in fact age as such seems to have had little to do with Chanute's attitudes and thinking. Their contention that somehow "senility" was responsible for Chanute's differences of opinion with them was gratuitous and a bit punitive when it surfaced a few years later.

In a quaint exchange early in 1905, reminiscent of their earliest communications, Wilbur answered Chanute's challenge that bird flight was more efficient than propeller flight in terms of energy expenditure by referring to Sir George Cayley's work on crows, which Wilbur could not recall exactly. He wrote to Chanute, "... I have been unable to complete some calculations of a somewhat similar nature from lack of definite information regarding the tip-to-tip measurement of a crow. Do you possess any information on this point?"[173] Chanute responded with some old-style statistical data dusted off from his files on buzzards and rooks, but in the meantime Wilbur had "secured and measured" a crow, and had concluded, differently than Chanute, that the bird was not more efficient than their plane.

At any point where Chanute threw down the gauntlet on an issue of aeronautics, Wilbur was unable to ignore him. Spratt had correctly noted that Wilbur could not resist an argument and in fact derived an intense satisfaction from engaging others in heated discussion of points of theory. Such discussions often occurred between the brothers themselves, and the

intensity of seeming anger was sometimes disturbing to those who did not understand that this was their normal style of "studying out" a problem. It is remarkable that long after the Wrights had ceased to grant Chanute much credibility on matters of flight theory, Wilbur was still arguing with him like a schoolboy with something to prove, an intellectual crusader confronted with an error-filled infidel. Shortly after his provocative comment on the efficiency of bird flight, Chanute mentioned in another letter that he believed "flapping wings to be more efficient than screws (propellers) because they utilize the currents produced by the upstroke."[174] Wilbur took up the opposite position, and the argument went on for a month.

Chanute's maintenance of active contact with the Wrights did indeed pay off for him to a certain extent. They confided in him all their plans for contacting governments to effect a sale of their plane (although they would not accept any help or intervention by him), and he served as counselor and advisor. As with the technicalities of flight, however, his comments were not much heeded by the brothers, and correspondence lived on for the informational rather than the advisory value of what Chanute could offer. Moreover, there was no small matter of politeness involved, since the Wrights were not so rude as to ignore Chanute's letters. If Chanute had failed to take the initiative in later years, it is quite likely that the Wrights would have let contact fall off.

In December, 1904, Chanute suggested to Wilbur that the Japanese might be willing to pay him and Orville large sums of money for "a few months' work in reconnoitring" in the Russo-Japanese war.[175] And five months later he wrote, "I should be glad to know where and when you are to resume your practice and how near you conceive yourselves to be from a practical machine which can be used in war."[176] Wilbur replied that their machine was ready "at once" - "a practical machine for use in war...capable of carrying two men and fuel for a fifty-mile trip. We are only waiting to complete arrangements with some government. The

American government has apparently decided to permit foreign governments to take the lead in utilizing our invention for war purposes. We greatly regret this attitude of our own country, but seeing no way to remedy it, we have made a formal proposition to the British government and expect to have a conference with one of its representatives at Dayton, very soon. We think the prospect favorable."[177]

Wilbur was referring to the form letter he had received from the U.S. War Department which, having been stung badly by the scandal surrounding its secret support for Langley's Aerodrome, was neither in the mood nor in the political position to hear more about flying machines, successful or not. The whole idea had been simply discredited for the near future. Chanute offered to intercede with the War Department on the Wrights' behalf, but Wilbur ignored this overture, writing with his now heightened sense of indignation at the government,

> " It is no pleasant thought to us that any foreign country should take from America any share of the glory of having conquered the flying problem, but we feel that we have done our full share toward making this an American invention, and if it is sent abroad for further development the responsibility does not rest on us. We have taken pains to see that "Opportunity" gave a good clear knock on the War Department door. It has for years been our business practice to sell to those who wished to buy, instead of trying to force goods upon people who did not want them. If the American government has decided to spend no more money on flying machines till their practical use has been demonstrated in actual service abroad, we are sorry, but we cannot reasonably object. They are the judges."[178]

Chanute could not understand the position of the U.S. War Department either, and he had, like the Wrights, underestimated the political damage done by Langley's use of secret funds to finance the aviation world's first "defense procurement" scandal. Nevertheless, while he sympathized with their turning to other governments, his natural wisdom and patience in such matters prompted him to hope that the Wrights would "find some way of saving our government from any ill results of its present blunder." Meanwhile, as the father figure and information center for aeronautics, he continued to publish in the field. He requested information

once again from the Wrights for a Standard Encyclopedia article he was preparing. They were willing to release so little information, however, that Chanute scaled down his mention of their work to a few sentences. Yet even at this wilbur found fault:

> "I doubt whether the expression "in perfect safety" on page 4, line 4, is quite justified. Such experiments are dangerous even though the event is favorable."[180]

Wilbur was becoming combative under the strains of rejection by the U.S. government, the shenanigans of Herring, the vague manipulations of foreign governments, the as yet reluctance of the U.S. Patent Office to grant a clear grant of patent (this finally came through in 1906), the perceived "betrayal" of their work to the French by Chanute, and last but not least by the terminal throes of the United Brethren Church controversy. The successful conclusion in May, 1905 to this church trouble ("We won complete victory," he wrote Chanute on May 28, "turned every one of the rascals out of office, and put friends of my father in their places."[181]) primed him for another battle and reinforced his perception that the Wright legacy was one of suffering injustice at the hands of ambitious and greedy men. The tone of his correspondence with Chanute became more abrupt and opinionated, revealing his hurt feelings, his anger, and his righteousness. Resisting the pressure to "go public" with convincing, open demonstrations of the Flyer, a course implicitly recommended but overtly disavowed by Chanute to avoid falling out of favor with the Wrights, Wilbur held firm to a stubborn protectiveness. "We certainly shall not disarrange our own plans to satisfy either public or private curiousity at this time."[182] Wilbur also slapped at the French - an insult to Chanute's national origins which, if not unconsciously motivated, was quite provocative - when Chanute mailed him an article by Ernest Archdeacon:

> "The article of Archdeacon seems to us to throw more light on French character than upon the science of flying. The footnote referring to the time when you volunteered to defray the expense of printing the Goupil paper is little and contemptible. It displays gratitude for your kindness in a truly French manner."[183]

In early November, Wilbur and Orville had reached a personal low point. They abandoned their plans to beat their own long-distance flight record, dismantled their machine, and stored it away in disgust. They would not fly again for two and a half years.

Later that month, it appeared that the British were more interested in keeping tabs on what other governments were doing than in closing any deal of their own, so the Wrights waded onto the perilous ground of negotiating with the French government. Though the French were far from being able to fly with any degree of success, their belief that soon they would succeed - after all, two humble Americans had done it - greatly weakened the Wrights' bargaining position, and gave them new cause for resenting Chanute's missionary work before the Aero Club de France in 1903. This erosion of trust in Chanute over that speech was probably a bit more than he deserved. The Wright wagons were circled so tightly around their invention and their negotiations that virtually no one was trusted. As their father Milton had done so often, they held rigidly to their position once they had concluded it was the right one, and any questioning of that decision by someone outside the family was almost de facto reason for mistrust and distance. Therefore when Chanute contacted Samuel Cabot in Boston, told him of the War Department's thick-headedness, and solicited from him an offer to organize a syndicate of U.S. businessmen to invest in the Wright plane (a plan they eventually carried out in France in 1908), Wilbur and Orville were unresponsive. Their business, like their Flyer, could rise only when they were in complete control.

The year 1905 closed with a tentative December 30th deal for one million

francs between the Wrights and a French syndicate, which was to sell in turn the Flyer to the French government. This prompted in January, 1906 an offer from the Austrian government to purchase a machine. The Wrights were off and running on what would prove to be a heartbreaking but ultimately successful venture of two years' duration into the sticky webs of the European "military-industrial-governmental" complex.

Chanute himself was busy at this time, having just closed a deal in Kansas City to construct a large store. He had put behind him for good his gliders and their attendant dreams, and settled into his role as correspondent-at-large. At this point press coverage was elevating the Wrights to national prominence, and Chanute observed wryly that their deal with the French "will make you world famous and eventually millionaires, if you care for the latter."[184] The announcement of the deal had inflamed French aviators who immediately claimed that their own success was just around the corner. The Wrights had reason to suspect that the whole deal might be just a ruse or a goad to French progress, and that in the end it would fall through in favor of some preferential treatment for a Frenchman. Chanute and the Wrights exchanged various newspaper clippings and journal articles at this time, which would soon become the basis of another disagreement between them. Chanute believed, according to some theory of opportunity and ambition, that all the French activity was bound to lead to a success soon, while Wilbur maintained that there was only one way to fly - the Wright way - and that no one in the world was closer than five years away from copying it accurately enough to succeed. "The fact is, said Wilbur, "that all or nearly all that you know from personal knowledge relates to the construction of our machine. The performances you have not seen. We have not felt at liberty to impose upon you the task of vouching for things you have not seen, while forbidding you to talk of the things you really do know."[185]

At 74 years of age, Chanute may have grounded his own dreams of being an architect of flight, but he also felt increasing personal pressure to see the powered airplane become a worldwide success and an accepted fact of life before his death. Therefore when the French "deal" indeed fell through due to amendments which the Wrights could not accept, and when in consequence Wilbur and Orville stuck even more tenaciously to their plan of sitting tight for an honest buyer, Chanute grew restive and critical of their "delays" and their "high prices". He had tried once again to have the influential Cabot family propel the Flyer into the market place, but the Wrights had again declined his assistance, saying "We have not definitely decided what course we will pursue if our present propositions are declined everywhere. My own idea is to stand pat and wait for something to happen which will bull the market. "All things come to him who waits".[186] Chanute did not have the years left for such patience.

When he intimated that he was restless with the Wright posture, Wilbur responded defensively with a supply-and-demand argument that there was

> "no such thing in the world as absolute value for anything. If there were, the air we breathe would be the highest priced thing in the world instead of the cheapest ... If it were indeed true that others would be flying within a year or two, there would be no reason in selling at any price but we are convinced that no one will be able to develop a practical flyer within five years ... Even you, Mr. Chanute, have little idea how difficult the flying problem really is."[187]

And just in case Wilbur would miss out on the chance for a good argument, he then challenged Chanute to defend his own viewpoints as to the proper price of a machine and the current state of the Wrights' competition.

Chanute argued back that there were other bright young men in the world, and just as there were many kinds of birds, there may be other fruitful lines of investigation, including - somewhat incredibly at this point - flapping wings, pursued by men of intelligence and resourcefulness. The argument -

this was perhaps the first open and emotional argument between the men - went on for six weeks, with neither side giving in. Probably the only result was to polarize Chanute and the Wrights a bit further. History would prove both men partially correct, though the main reason for Wilbur's overestimation of their own position was his underestimate of the extent to which others had already profited from the Wrights' work. Perhaps the principal conduit for such information to others had been Octave Chanute.

In December of 1906 a New York businessman, U.S. Eddy, noticed some brief references to the Wrights in the New York newspapers and thought their invention might be of interest to a former partner of his, Charles R. Flint. Flint was a nineteenth century magnate (Katharine Wright described him and his wife in 1908 as "very kind-hearted people, but make me laugh with their immense amount of blowing and affectation!") with interests in shipping, banking, and promotion of new devices and inventions. His associate in Paris, Hart O. Berg, had helped introduce electric automobiles to France in 1899. He was well experienced in international marketing, having represented Simon Lake in his efforts to sell the submarine in Europe.

Flint got in touch with the Wrights, and was able to convince them that a different course of action was necessary. "Their idea," Wilbur wrote to Chanute, "seems to be to depend on getting possession of the market by being first in the field rather than by depending on patents alone or secrecy alone ... Do you think them safe people to deal with under proper precautions? The price and terms are satisfactory and we would accept if we felt sure of their character."[188]

This was a wise step in the right direction and Chanute approved, provided that the invention was not allowed to pass into the hands of a single nation which might then use it aggressively for military conquest. He had known Flint for twenty-five years, but not personally, and "understood that he is a very

rich merchant who has had extensive dealings with the South American republics and with European war departments."[189] The moral issue of selling the Flyer to a government had bothered the Wrights and Chanute for some time, and their argument in favor of the sale was a one now familiar enough to all the world, i.e., that if all nations had the airplane, the threat would be neutralized by being equalized on all fronts. They went ahead with Flint on proviso that sales to all nations be granted. The whole of 1907 was spent in bargaining with Flint & Company, and in the Company's bargaining in Europe. In the meantime, personnel changes in the U.S. War Department combined with the pressure of the Wrights' European business efforts to open up anew the possibility of a sale to the American government.

Before Wilbur left for Europe for negotiations, he and Orville decided to give the sluggish American bureaucracy a final jolt. On April 26, 1907, the U.S. military planned to stage a massive naval ceremony in the waters at Hampton Roads, Virginia to commemorate the 300th anniversary of the founding of the first English colony at Jamestown. It was to be a major event, with many political and military dignitaries in attendance, including President Teddy Roosevelt. The Wrights' plan was to fit their Flyer with pontoons, take off from Albermarle Sound at Kitty Hawk, fly up the coast to Hampton Roads, and "buzz" the naval review. The Flyer would then return to Kitty Hawk, leaving a large portion of the U.S. governmental hierarchy either dumbfounded or apoplectic. Unfortunately, in late March they damaged a propeller while experimenting with the hydroplaning pontoons on the Miami River in Dayton, and abandoned the plan. Had they succeeded, their daring no doubt would have rivaled anything else that has come down through the years about the, and a "surprise" biplane flight over the parade would be an essential segment of all future Jamestown commemorations. But it was not to be.

In May, 1907 Wilbur sailed for Europe to participate in the Flint Company negotiations. Chanute's opinion, expressed to Orville, was that the trip would finally impress upon Wilbur the danger that their Flyer could be rapidly superceded by the French. Orville, not to be divided and conquered in his brother's absence, wrote back with full confidence that they were in no such danger.

By July 1907 Chanute's concern that an adequate written record of the Wrights' work eventually be penned, if not by him, was more urgent than ever. "You ought to leave with your father or sister a full written account of the features which make your machine a success."[190] Orville, however, was busy crating an airplane for shipment to France, where he was to join Wilbur in preparation for flight demonstrations subsequent to any successful closing of a deal. This was as yet a very chancy affair, as the politics within the French bureaucracy were quite complex regarding the Wrights. If dealing with the American government was like swimming in molasses, dealing with the French was like a footrace through a house of mirrors. For this reason, and partly to stir up the French, Wilbur left Orville in Paris on August 4, 1907 and headed for Berlin with Hart O. Berg. Negotiations proceeded in France and Germany for the next three months, and at the end of October the brothers received word in Europe from the U.S. War Department that it would be interested in hearing more of their invention. The direct intervention of Theodore Roosevelt had been necessary to rouse the slumbering giant. Wilbur arrived home in Dayton just before Thanksgiving, while Orville remained in France to arrange for engines to be built for some Wright demonstrations planned in France for the Spring of 1908. Orville came home on December 13.

Chanute had not heard from the Wrights for three months, so on December 1 he wrote to Wilbur, restating his opinion that the French were making greater progress than Wilbur thought. "It is said that no news is good news," he said,

"yet I shall be glad to have a letter from you saying that you and Orville are in good health and have succeeded in securing proper rewards for your achievements."[191] One almost suspects that Chanute was deliberately prodding Wilbur into a reply, knowing that he could not turn down the opportunity to refute Chanute's now well-worn contention about French aeronauts. Wilbur indeed responded, with two letters - one on December 3 and the next on the 9th -, the latter being a very lengthy description of all the European dealings. Chanute filed this letter along with all the other Wright correspondence, with a conscious intent of establishing a collection of historical interest. He also gave Wilbur a Christmas gift of sorts (it coincided with Christmas, at any rate) of a membership in the National Geographic Society and a subscription to that Society's famous magazine. True to form, Wilbur allowed himself to be egged on to an argument over the likelihood of others "catching up" to them, and in so doing he implied that Chanute's opinions had made their lives difficult. "The belief that others would soon succeed in attaining results equal or superior to ours," he wrote Chanute, "has of course been one of the serious obstacles we have always had to contend with... It was based on the general principle that what one can do, others can do."[192] Chanute responded with a rather sharp opinion that the Wrights had let so much time go by that their present financial success depended on "the unpleasant eventuality of serious accidents to some of your competitors"[193] In this letter he also made clear, though unintentionally, what Wilbur kept on ignoring about him - that his prediction of European success was based not on his high esteem for French researchers, but on his calcified conviction that the Wrights had not done anything but build a better mousetrap, that there was no real progress in Flying machines that could not be found in Chanute's own 1894 book. As late as 1908 he believed that the Flyer counteracted centrifugal force in a turn by

the pilot's shifting of body weight, and he was virtually ignorant of the rudder-and-wing warping interplay used by the Wrights to bank around a turn. Of course, it appears that Wilbur never took much time to explain these things to Chanute or enlighten him on the principles of flight because he did not wish more publicity of the 1903 Aero Club variety. Therefore, he chose to live with the consequences of Chanute's misperceptions rather than face the dangers of educating him, would that be possible in the first place. Chanute's psychological block, that progress stopped on the last page of his own book, was enormous. "We do not shift weight," said Wilbur, "We combine right and left wings of variable inclination with means of preventing movement about a vertical axis."[194] Such elucidation could hardly have been enlightening, but in Chanute's case seems not even to have provoked much curiosity.

April and May 1908 were devoted to practice flights at Kitty Hawk, with the Flyer painted a uniform metallic silver to confound photographers and obscure details of design and construction. Just after the middle of May they finished their practicing a bit prematurely when Wilbur crashed the machine in the sands, and they went their separate ways, Wilbur directly to New York and then to France for his LeMans flights, and Orville to Dayton and, eventually, to Washington, D.C. for the Army trials at Ft. Myer. Chanute receded more and more into the background, becoming less of a correspondent and more of an adversary. Patent infringements were already occuring. Glenn Curtiss and his associates in the Aerial Experiment Association were putting out an airplane in June for sale at $5,000. "They have got good cheek!" exclaimed Orville to his brother.[195] Statements such as Chanute's that the Wrights had done nothing particularly new were very damaging in the resulting patent litigation.

On June 15 Orville wrote Wilbur about an article Chanute had written for

the "independent" calling them "opinionated as well as straight-forward", and "criticizing our business methods, and saying that we have always demanded and exhorbitant price."[196] Wilbur was concerned that the record of their debt to Chanute be set straight, as well as the debt owed them by both European and American aviators. He therefore encouraged Orville to clarify this matter in an article the latter was preparing for Century magazine. But while this was being done, Orville discovered another Chanute article in a German magazine "Illustrierte Aeronautische Mitteilungen",

> "... in which he again criticizes our business methods, says we have spent two years in fruitless negotiations because we have asked a ridiculously high price, but that now we have gone to the other extreme in making a price to our own government... He has also become a convert to airships, and thinks they are going to have great value in war. He says the use of the flyer is greatly overestimated, generally, and that its uses will be very restricted. He seems to be endeavoring to make our business more difficult..."[197]

Chanute himself portrayed the article in a different light to Wilbur, assuring him that it would restore the Wright claims on their merits in Europe.

Even Bishop Wright, normally taciturn on the issue of his sons' work, sent Wilbur a clipping of Chanute's "Independent" article with the following fatherly advice attached:

> "There seems to be a little meddling with your prices and judiciary process on your ideas, in the foregoing, and a little assumption of your change of view, and a little ascerbity (sic) that you did not train under his advice. But age and premiership are to be considered in the case. Better no rupture with a <u>former</u> friend."[198]

Having been conferred to the status of former friend by no less than the head of the Wright household, Chanute was now more alienated from the brothers than ever. And with all the publicity the Wrights were generating came more requests for information from Chanute, and more opportunities to compound his initial mistaken notions, and express his resentments. When Paul Renard, editor of a French scientific journal, asked Chanute for a statement regarding his contribution to the Wrights' achievement, he answered with honest but

erroneous conviction that their technique of wing-warping had been discovered and patented in 1897 by Louis-Pierre Mouillard (a romantic Frenchman living in Egypt who had at one point been one of Chanute's gliding alter egos), and that the central Wright accomplishment had been the mounting of a motor on a glider design that was already well-known and used. Chanute believed that Mouillard's idea of varying head resistance on each wing by dropping a flap to obstruct the air flow and thereby turn left or right - something like dropping an oar off the side of a canoe to turn it - was in fact "aileron control" or wing-warping, as designed by the Wrights. It was not. He also, again without any particular malice intended, completely forgot or underestimated the quietly revolutionary contribution of their 1901 wind tunnel experiments.

In the heady glory that attended the Wrights' demonstrations in Europe and America during 1908 and 1909, Chanute was not restrained in his congratulations nor was Wilbur antagonistic. A kind of truce prevailed as the world showered praise on the two brothers.

However, when Orville learned that Glenn Curtiss had been chosen by the Aero Club of America to fly in the International Aviation meet at Reims, France in late August, 1909, he and Wilbur brought suit against the Aeronautic Society of New York and the Herring-Curtiss Company (Herring, one can infer, had found a new benefactor). This suit, and several others brought by the Wrights against patent infringers in the U.S. and Europe, salted the wounds with Chanute beyond healing. There was great pressure on experts to take sides, and the merits of the case tended to get lost in debates about the selfishness of the suits, or in self-serving opinions by academics (such as Alfred Zahm, then at Catholic University) who had financial stakes in the outcome. Though Chanute saw the Wrights' attempt to corner the market as a reprehensible limitation on scientific investigation - they had "turned pro", after a fashion - he was not

so venal as to allow personal or financial motives to influence his testimony. Yet the lack of any real comprehension on his part of how the Wright Flyer flew did not inhibit his pronouncements on the subject. Actually, it was his complete unawareness of his own ignorance that allowed him to do so. He made a number of public statements against the Wrights' claims, declaring that while their actual machine was new, the principle of its operation had been in use for nearly fifty years, and was of French origin. He also made such statements to Curtiss and to Curtiss's lawyer in the patent litigation, Emerson Newell.

Adding insult to injury, Chanute tried unsuccessfully to block the Smithsonian from awarding the first "Langley Medal" to the Wrights for their "specially meritorious investigations and deminstrations of the practicability of mechanical flight by man." Chanute was chairman of the awards committee, and his objection to the Wrights had been their refusal to publish their results as good scientists should. "The Wright brothers are keeping their investigations secret and hope to make money out of the knowledge," he protested to James Means, a wealthy Boston shoe manufactuere and compiler of the Aeronautical Annals of 1895-97.[199] But Senator Henry Cabot Lodge, not wishing to have Europe excel America in honoring the Wrights, introduced a resolution to the Smithsonian Board of Regents with the backing of Alexander Graham Bell, which bypassed Chanute's committee and made the award, on February 10, 1909. Chanute's committee confirmed the Regents' decision retroactively, and the medals were awarded a year later in Washington.

In the meantime, and in spite of their world acclaim and medals, the Wrights' polarized opposition was doing considerable damage to their achievements, portraying them as small-minded bicycle mechanics who simply were skillful at piloting airplanes whose design was pirated from other, more obviously "scientific" persons.

One journalist, Arnold Kruckman of the New York World, wrote on December 12,

1909 of the Wrights and their relation to Chanute: "Their persistent failure at acknowledge their monumental indebtedness to the man who gave them priceless assistance has been one of the most puzzling mysteries in their career."[200] Wilbur wrote a harsh rebuttal in which he stated how things had gotten so difficult with Chanute:

> "... Many of the published stories have been very embarrassing because if left uncorrected they tend to build up a legend which takes the place of truth, while on the other hand any attempt on our part to correct inaccuracies gives us the appearance of ungratefully attempting to hurt the fame of Mr. Chanute. Rather than subject ourselves to criticism on that score we have preferred to remain silent, but now you find fault with our silence. We, rather than Mr. Chanute, have been the sufferers from this silence so far, and we see no immediate danger that he will not receive the credit to which he is justly entitled for his services to the cause of human flight."[201]

Later that month the 78 year-old Chanute went forth once again, this time to Boston, to lecture before the American Association for the Advancement of Science. His topic, forever associated with his name though he had long since lost touch with its cutting edge, was, as usual, "the present status of aerial navigation."

In mid-January, 1910, Wilbur confronted Chanute with the older man's statements about the originality of their ideas, and declared, "It is our view that morally the world owes its almost universal use of our system of lateral control entirely to us."[202] This was the opening salvo in what would be the sad finale to their long relationship. Chanute countered with a re-statement of his opinions and his fear that Wilbur's "usually sound judgement has been warped by the desire for great wealth." He also voiced resentment over Wilbur's comments at a Boston dinner in Chanute's honor, on January 12, 1910, to the effect that Chanute had sought out the Wrights rather than vice-versa, and had "turned up" in Dayton in 1901 to see them.[203] Wilbur's response to this was one of the most lengthy, sarcastic, and angry letters he ever wrote. All his resentments towards Chanute from April 1903 to the recent patent

litigation were voiced, including his feeling that it was difficult for him and Orville to say just exactly how Chanute had contributed to their success at all. More than anything else he was angry not so much because Chanute had distorted facts, but because he had let so much misrepresentation by others go uncorrected, thereby conferring upon it the status of truth. Suggesting that they issue a joint statement for publication to clarify matters, Wilbur concluded:

> "I have written with great frankness because I feel that such frankness is really more healthful to friendships than the secretly nursed bitterness which has been allowed to grow for so long a time. I expect that we will always continue to disagree in many of our opinions just as we have done ever since our first acquaintance began and even before, but such disturbances need not disturb a friendship which has existed so long. We do not insist that friends shall always agree with us."[204]

Chanute was shocked, and reluctant to enter into further dispute with so combative an adversary, claims to tolerant friendship notwithstanding. When three months had gone by without a reply, a calmer Wilbur took the initiative and wrote,

> "My brother and I do not form many intimate friendships and do not lightly give them up. I believed that unless we could understand exactly how you felt, and you could understand how we felt, our friendship would tend to grow weaker instead of stronger. Through ignorance or thoughtlessness, each would be touching the other's sore spots and causing unnecessary pain. We prize too highly the friendship which meant so much to us in the years of our early struggles to willingly see it worn away by uncorrected misunderstandings, which might be corrected by a frank discussion. I realized that few friendships are able to stand the strain of frankness, but I believed that it would be better to discuss matters freely than to permit small misunderstandings to gradually grow into big ones by neglect. My object was not to give offense, but to remove it. If you will read the letter carefully I think you will see that the spirit is that of true friendship."[205]

Chanute's reply in mid-May was the last letter he ever wrote to the Wrights. He complained of ill health, reiterated his opinions on the non-originality of their system of lateral control, confessed his hurt feelings at not being granted his share of the success as he saw it, and hoped that their former friendship could be resumed upon his return from a trip to Europe. He died in Chicago the following Fall, on November 23, 1910.

Unfortunately, his misunderstandings were not interred with his bones. His family remained very bitter over what they saw as the Wrights' slighting of Octave, and as late as March 2, 1945, daughter Elizabeth wrote to her niece:

> "Father never gave the Wrights any money but, what was vastly more valuable, his plans, specifications and knowledge for he went down to Kitty Hawk North Carolina and helped them with their experiments. The Wrights have said Father was kind in helping them when they were discouraged, but they had never said he had given them his plans and specifications. Father's Flying Machine was a Glider without an engine as there was none light enough to use. Wilbur Wright was a clever mechanic Father said and built a light gas engine which he used in the machine when he was at Kitty Hawk."[206]

The image of Orville and Wilbur as "clever mechanics" was as pejorative as the image of Octave Chanute sitting on the dunes as a mere witness to aeronautic history. Yet to appreciate the richness of each other's perspectives, as they might have done had Chanute not died so soon after overtures were made, the Wrights would have had to soften their stiff righteousness and Chanute would have had to make a conceptual leap of Missouri River proportions. One would be hard-pressed to determine which party might have had the easier task.

WILBUR

To a pilot or an aeronautical engineer manned flight constitutes no more and no less a miracle than manned bicycling. The phenomenon is totally explained by physical principles. In fact, by the middle of the nineteenth century the new profession of engineering was slowly working toward the important psychological conviction not so much that man could fly, but that there was no theoretical reason why he could not fly. It was a tentative step of mechanical vision, awaiting the follow-up of some practical experimentation.

Efforts to realize this vision were well on their way in the late nineteenth century when, for a variety of reasons, they sputtered and stalled. Perhaps the most fundamental cause could be stated simply: there was much more to the problem than anyone had bargained for. Furthermore, Europeans were discouraged and even frightened by the gliding deaths of Otto Lilienthal and Percy Pilcher, and Americans were as yet still enthralled by the "miracle" of railroads, telegraphs, telephones, electric lighting, and other innumerable progeny of industrial pioneering.

One young American was stirred by this torrent of progress, and as he looked back over his 32 years in America's heartland he could see no clear way that he would ever be a success in life. He had done well enough in a few jobs and had an excellent record in school, but he had not pursued his education past the twelfth grade. He had spent a great deal of time at home taking care of his sick mother and quietly absorbing his father's library collection. He was not much of a socializer, did not like the attention of others, shrank from aggressive action in the business world, and could not see himself fitting in to any particular career with much comfort or enthusiasm. Sometimes he thought himself best suited for teaching, but he was not really sure. On the other

hand, he was bright and inventive and very independent - maybe even aggressive - in his thinking. Sometimes he may have thought that there was really no good reason why he should not be a success.

Looking dispassionately at his own talents and abilities, Wilbur Wright decided to tackle the last great transportation problem of the Machine Age - powered, manned, and controlled flight. In a way it may just as well have been the sewing machine, the icebox, or the telephone. The problem itself did not so much matter as the opportunity it afforded to launch his own abilities into that stream of progress accelerating all America into the twentieth century. From Wilbur's perspective it was a timely opportunity, for no one had succeeded thusfar. Few had even come close to understanding some of the basic facts of aeronautics. Moreover, this problem offered a physical as well a mental challenge to someone who thought of himself as perhaps an invalid, certainly someone weakened in stamina as a youth.

This was a bold decision for a small-town man of mediocre accomplishment and a high school education. It was so bold that four years later, when he and Orville flew successfully across a North Carolina beach in mid-Winter, the academic engineering profession and the scientific establishment grew jealous, the press grew sensationalist, the public grew incredulous, and the marvelous product of the Wrights' genius largely disappeared from the news for nearly five years. Decades later some still had difficulty in forgiving the Wrights their apparently effortless triumph. Effortless it was not, but neither was it a miracle. Their accomplishment and now it came about are - well, near totally explainable phenomena.

If the reader does not understand how an airplane rises off the ground, changes direction in the air, and lands again, I encourage finding out. The

Wright brothers' story has for many years been paradoxically obscured rather than enlightened by the halo of the "miracle" of flight, giving rise to multiple mythologies about the "bicycle makers from Dayton" who stumbled onto the answer, or the power of native American genius, the benefits of moral living, and the like. But I will not take up the few pages that such an explanation would require. My interest is not in the physics of flight, nor is it especially devoted to an historical account of the Wrights' work. My fascination is with the individual psychologies of Orville and Wilbur and with the power of their relationship. Each was able to magnify his abilities through close working union with the other to achieve in relatively short order a success which had eluded the best brains on two continents. This itself is not a psychological miracle, but the dynamic process of an intimate working union - a marriage of sorts between the bachelor brothers, with all the tensions inherent in such unions. The airplane was their "baby" - Wilbur called it this in a 1904 letter to Octave Chanute - and what follows will be a description of the relationship which produced it, and the parties thereunto.

FORMATION

> "Early incidents relating to him, though interesting to the family, are not important enough to justify publication."[1] (Milton Wright)

Like one of those old pots or vases in a museum where an archeologist has filled in with clay the shocking gaps between meagre original fragments to form a credible whole, one approaches the life of Wilbur Wright with some doubt that the whole can ever be adequately divined. The Wright family never really understood and certainly never accepted the broader public reciprocity incumbent upon the famous, and their markedly unpsychological interests led them to the conviction that others would be, as they were, interested solely in the

technological and inventive aspects of their life's work. Wilbur may have risen to the larger autobiographical task had he lived beyond 1912. But his death from typhoid in May of that year left Orville as history's last best hope for a fuller accounting. This never happened. For reasons which shall be outlined later on, Orville remained boyishly and stubbornly reluctant to leave the security of his gadgets and his private routine of tinkering away at life's mechanical challenges. For that matter, Wilbur himself had become bogged down in a sort of secular replay of his father's righteous crusades in the United Brethren Church, though this time the sword was wielded - appropriately enough in America's new century - not in the church but in the courts.

Having thus stated my frustration at the paucity of data, I suppose I have uttered the equivalent of an archeologists small curse at unearthing only one-tenth of what one feels would be needed to do the job properly. Indeed, perhaps that is why the job has not so far been done.

Let me then perform a service to the reader by previewing the expected general outline of the most likely whole. If constructed with fidelity and common sense, it is not a particularly scintillating or glamorous composite. There are no deep family secrets, no glaring neuroses, no scandalous passions of any persuasion, no deeds to shock or arouse, no riveting surprises or heroics. Such things were simply not there in the lives of the Wrights. Even such things as early relations with peers and parents, early memories, dreams and fantasies, intimate letters, details of introversion and feeling, webs weaved with the opposite sex, formative intimacies - all the raw clay of character formation - all this is gone, as surely as if someone a hundred years hence would try to capture the crucibles of my own personality, or yours, with the traces we have left behind us. This Wright treasure is buried beyond retrieval under

many sodden layers of time and disregard, unintentional and otherwise.

But I'll spare you any further protest. Put simply, if you have no taste for American Gothic, and are wedded to a stricter standard of retrospective interpretation than I, consider yourself forewarned.

Wilbur entered the world as he traveled through it - ascetically and with a minimum of creature comfort. He was the third son of his preacher father and long-suffering mother. All three sons had been born in different locales within the state of Indiana - Reuchlin (1861) in a farm near Fairmont which would remain in the family for many years, Lorin (1863) at his paternal grandparents' home in Fayette County, and Wilbur, on April 16, 1867 in a small farmhouse Milton bought near Millville, about 50 miles west of the Ohio border. A country doctor, James A. Stafford, delivered Wilbur into what was then regarded as the American West. With thousands of Civil War veterans loosed upon the territory it was a rough-and-ready time. Wilbur, named after one of his father's most admired churchmen, Wilbur Fiske, was neither rough nor ready.

In all likelihood (I reach for liberal dolops of psychological clay) he was a sensitive, cautious, compliant and shy child, prone towards premature assumption of responsibility, and very much the dutiful and conscientious son. He was not, however, sickly or physically retiring. He was a quick developer, walking at eight months and becoming in his teens an excellent ice skater and gymnast. Bishop Wright encouraged all family members to partake of the conventional nostrums of the time - regular exercise, regular sleep, and balanced foods. It was an age when things like "dyspepsia" and "weakened enervation" sent legions of the distressed into permanent semi-invalidism, and drove just as many into sulphur bath cures, hydrotherapy, electromagnetic therapy, and the like - perhaps, I suppose, as some future age will look back upon our own

therapies for the soul's ills.

A year and a half after Wilbur's birth the Wrights moved to Hartsville, Indiana, where Milton and Susan had met as students and married more than ten years past. Nine months later, Milton's new church duties as editor of the Religious Telescope broght the family to Dayton, where they purchased a seven-room house in a modest neighborhood in the western part of the City, across the Miami River and about a mile from the central business district. This was the "7 Hawthorn St." residence which Henry Ford (somewhat acquisitively, I think) moved to his Dearborn, Michigan museum, along with the Wright Cycle shop, in 1937 - all with the blessing of Orville.

It was between the births of Wilbur and Orville that Susan delivered twins - a boy, Otis, on February 24, 1870 and a girl, Ida. Soon thereafter - "in infancy" - both babies died. Nothing is known about this event or its impact on the family. Though infant mortality was higher then than today, and every parent therefore lived with the conscious anxiety that infants might not survive, the deaths of newborns were not inconsequential. It seems reasonable to suppose that in this average, middle-American, well-domesticated family there was a significant heartache. No doubt the sorrow to Susan, and the danger to her life in childbirth, were sensed by the then youngest child Wilbur, nearly three years old. Perhaps he was more than expectable concerned about his mother and father at this time - he was certainly so later as a young man. But whatver the details, I think we are on safe ground when we posit a rather special and serious relationship between Wilbur and his mother in his early years, growing not only out of his precociously responsible attitude but also out of a small boy's fear of disruption to the integrity and happiness of the home. We do know that when Susan was dying slowly of tuberculosis in the

years 1885-1889, Wilbur coincidentally became invalided with "heart palpitations" following a painful facial injury while playing hockey. He abandoned his plans to leave home to prepare for the ministry, and became his mother's primary caretaker and nurse until her death on July 4, 1889, left him stranded at home on the shoals of an unfinished adolescence.

In 1871 Orville was born in Dayton, and three years later to the day came the only surviving daughter and the last child, Katharine. In 1878 when Wilbur was 11 years old, Milton was reassigned to Cedar Rapids, Iowa, and the family moved there for three years (changing residences in Cedar Rapids three times in as many years, for reasons which are unknown). They then moved to Richmond, Indiana where it was hoped that Susan's failing health and spirits might be lifted by the company of her sister. The Wrights returned to Dayton in June, 1884 and remained there for the rest of their lives.

Wilbur did not begin formal schooling until he was eight years old, but he showed up in class more than adequately prepared. His father had taught him to read and he had very early on developed the reputation as someone who could spend hours lost in books. During his mother's slow decline and during his own "invalidism",

> "He all those years used his spare time to read and study, and his knowledge of ancient and modern history, of current events and literature, of ethics and science was only limited by the capacity of his mind and his extraordinary memory. He became a clear writer and a ready extempore speaker, almost wholly without practice in the latter."[2]

Elocution was an important part of a young man's education in those days, with an emphasis on the power of the written and spoken word that would surprise today's paraliterary students. But if Wilbur became a "ready extempore speaker" it was minimally evident in his later life. If his adult years are any guide he was a very shy youth, not without friends but without much need for

affiliation, and quite capable of amusing himself with his imagination and his books. Introverted, quiet, and tending a bit toward gloominess, he was a thinker rather than a doer, contemplative rather than industrious, protective of his inner, private life, and a shade overserious in his manner and affectations. In Richmond, Indiana he refused to indulge his interest in 11 year -old Orville's kite flying lest he appear too juvenile.

If Wilbur was self-sufficient and confident about his capacities for relating with boys (even if he chose not to), he appears to have been mortified and stiffened by girls. We know nothing about the Wrights' sexual education, sexual attitudes, sexual development, sexual feelings, or sexual anything. In all likelihood they shared the late Victorian mythologies of the time, which in the area of sex proved to have a life far more enduring than the age itself. The majority of young Americans then, and probably even in modern times up to the late 1960's, had their feelings shaped against a background of prudery and shame about physical sex and sex relations. Such feelings in turn helped shape social attitudes in some very warped postures. With the possible exception of a single high school crush on a classmate (about which we have no information) there is no record of any heterosexual attachment outside the family at any point in the 45 years of Wilbur's life. We do know that he had an easy and relaxed attitude towards older women, but that he was acutely shy with younger women. Charles Taylor, a mechanic who was both friend and employee of the Wrights, recalled of the 37 year-old Wilbur:

> "He would get awfully nervous when young women were around. When we began operating at Simms Station on the outskirts of Dayton in 1904, we always went out on the traction cars. If an older woman sat down beside him, before you knew it they would be talking and if she got off at our stop he'd carry her packages and you'd think he had known her all his life. But if a young woman sat next to him he would begin to fidget and pretty soon he would get up and go stand on the platform until it was time to leave the car."[3]

Wilbur's oversensitivity as a "good boy" to the needs of the older generation, and more damagingly, to the prohibited needs and feelings within himself, are central to understanding what one author has called Wilbur's "lost decade"[4], from about the time of his accident in March, 1885 to the beginning of his serious interest in flight, in August, 1896 when news of Lilienthal's death reached Dayton in McClure's magazine. In fact, Wilbur's sense of personal vulnerability and, if you will, "inadequacy" to meet life's challenges were a kind of forge in which his iron asceticism and self-discipline quietly took shape. From the point of view of demonstrable achievement, this was a time of floundering and indecision for Wilbur - a "lost decade". But from a psychological point of view it was more like the slow compressing of a spring, with an ultimate launch into one dramatic accomplishment.

Wilbur's accident at age 17, just one month short of his eighteenth birthday, deserves a closer look, not as some dramatic and causal trauma but as a sort of crystallizing event - a "negative catalyst" which hardened temporarily, which froze into an unfortunate delay, the rather delicate remnants of Wilbur's boyhood.

Nine months prior to the March accident, in June 1884, the Wrights had moved from Richmond back to Dayton. They were living in temporary quarters, and would do so for the next 16 months until the lease expired for the renters of the property at #7 Hawthorn St. Wilbur had essentially finished high school in Richmond the previous Spring but the family moved just before graduation exercises, so Wilbur never received his diploma. With typical pragmatism, Wilbur decided - with his father's approval - that commencement exercises were mere frills and that the education he had received would survive without them. He did not make the 50 mile trip back to Richmond to graduate with his class. Instead, he enrolled in Greek and trigonometry classes at Steele

High School in Dayton, where sister Katharine would later teach Latin and Greek, and planned rather vaguely to go to divinity school.

It is difficult to determine the meaning of a graduation exercise and diploma in those days. On the one hand, Wilbur was well-tutored by his parents, well-read on his own, quite apart from formal education, and there was therefore less of a reliance on the possession of formal testimonials in order to feel "educated". On the other hand, finishing high school in 1884 was a far greater accomplishment than it would be today:

> "As late as 1890, the high school had touched only a tiny minority of the American people; of the nation's children aged 14 to 17 years, the number enrolled in all high schools and private secondary schools amounted to less than 7 per cent. Of that number, only an insignificant percentage went on to college."[5]

If high school graduates of that time did not go to college, it was not because they had received inadequate scholastic preparation. The command of mathematics, languages, and composition was arguably greater than that of today's college student. As a somewhat self-denying young man, conscious of not "wasting" emotion or family resources and shy about sentimentality, Wilbur might have needed a push to return to Richmond and graduate formally with his class - just as he needed a push in 1901 to speak before the Western Society of Engineers in Chicago. He was the sort of person to spurn any public sentiment or occasion as self-serving and insincere. But in 1884 no one pushed him. What might have been seen as a sign of his ambivalence about career commitment and confusion over his future was seen merely as a practical decision. In my estimation it was an instance of the family's need to have him at home colluding with his own guilts and responsibilities about leaving, leading to a "blindness" on their part towards Wilbur's difficulties. It was four years later before someone in the family asked, "what does Will do? He ought to be doing something. Is he still cook and chambermaid?" (Lorin)[6]

With the family so tolerant of his indecision, Wilbur was able to drift into an acceptable rationalization by adopting the role of invalid on the one hand, and caretaker of Mother on the other. Invalidism - a statement, really, of one's felt vulnerability and incapacity in life - set in fairly severely with Wilbur. He became convinced that the trauma of his facial injury had weakened his heart and his digestion. Capitulating to the less assertive and less active side of his nature, he withdrew from life in a sort of gloomy and bookish introspection which depressed him still further and eventually concerned the family. In later years, when George Spratt would complain to Wilbur of depressed mood and feelings of uselessness, Wilbur counseled him sympathetically but firmly, and we see in this counsel some idea of how Wilbur eventually overcame his own gloom:

> "I see from your remark about the "blues" that you still retain the habit of letting the opinions and doings of others influence you too much. We thought we had partly cured you of this at Kitty Hawk. It is well for a man to be able to see the merits of others and the weakness of himself, but if carried too far it is as bad, or even worse, than seeing only his own merits and others' weaknesses. In the present case there was no occasion for your "blueness" except in your own imagination. Such is usually the case."[7]

And when such reasonable counsel proved insufficient over the next couple of years, Wilbur's basic reliance on inner strength and willpower to overcome self-doubt was revealed plainly. Twelve days from his first attempt at powered flight, and fifteen days from success, he wrote Spratt from a cold and solitary outpost on the Carolina shore (Orville had gone to Dayton to repair broken propeller shafts):

> "I am sorry to find you back at your old habit of introspection, leading to a fit of the blues. Quit it! It does you no good, and it does do harm. I have sometimes thought that this is the result of your living and working too much alone."[8]

From the protected, if depressing, self-absorption of invalidism to a determined self-sufficiency in a bleak winter encampment, Wilbur had come a long way. Though sympathetic to others' weaknesses, he was irritated by the prolonged

indulgence of weakness and by the chronic inability of others to master their self-doubts. Having overcome his own fears by what appears to have been sheer force of will, he never fully understood the psychology of his own motivations, nor did he care to, since such introspection always threatened to plunge him again into futile self-absorption. Wilbur Wright was not naively unpsychological in his outlook, he was resolutely so.

He was also resolutely independent in later years from the influence and suggestions of others, having perhaps allowed in his younger days an overemphasis on the value of others' approval or disapproval. To some extent this value had lain behind his contacting Octave Chanute, a contact about which he eventually developed some misgivings. In discussing the question of Wilbur's tendency as a very young man to be too attentive to the opinions of others, we should look at his plan to enter the ministry and the whole matter of his identification with his father.

Wilbur was exceptionally close to his father, as Milton was both a loving and controlling pater familias whose chief passion in life, perhaps even exceeding his ministerial work, was his family. There is no particular evidence that Wilbur was marked in any way to follow his father's vocation - he was named after a churchman, but so was the unministerial Orville. Though Wilbur was given no particular career direction by his father, the strong and righteous way in which Milton had carried out his ministry undoubtedly made an impression on the vacillating boy. Though perhaps no special distinction would come to him by following in his father's footsteps, he was at the same time unsure as to where his own niche might be. Unable to strike out on his own and unwilling to march so energetically as yet down the path of righteousness, Wilbur found retreat in infirmity.

He also managed to serve both his parents very well from this position.

For four years he was the principal caretaker for his mother, relieving his father from a considerable burden during his church controversies and his many travels, and providing his mother with constant, loving help. In her final months he carried her downstairs every morning to the living room so that she might be part of the daily routine and have a change of pace from her sickbed. At the end of each day he would carry her back upstairs again to her bedroom. Not only did he achieve a remarkable intimacy here with his mother, but he nurtured an adolescent loyalty to her memory that interfered forever with any other attachment.

This act of self-sacrifice by Wilbur came not just from love and loyalty to Susan but was also a major act of devotion and assistance to his father, whose travels and troubles away from home created a sort of "stand-in" role for his responsible son. There was never a hint of resentment from Wilbur since this role coincided nicely with ~~a developmental vacuum~~ indecisiveness in his own life and gave him a purpose wholly compatible with his sense of duty and conscience. Not only was Wilbur comfortable as "cook and chambermaid", as Lorin rather cuttingly put it, but he zestfully joined his father in the latter's UBC battles and became a trusted and active combatant on his father's behalf. His zeal in these undertakings casts doubt on any conclusion that Wilbur was grossly depressed after his accident. Certainly he was brooding and indecisive with regard to his own life, but when it came to the defense of his father and the Wright name he was unquestionably active and sharp.

His activity, however, was not fully satisfactory to him because it was not felt to be truly <u>his</u>. He was sufficiently a product of his age that dreams of material and/or scientific success could not be easily shelved while going about his father's business. Eventually he drifted closer to Orville's work in printing, for this provided a transition for his interests and set the

stage for his own contribution to technological progress.

We do not know the effects of Susan's death on her family, except to say that it appears to have prompted a coalescing around the needs of Milton, whose combined love and domination effectively stalled any nest-leaving by his remaining children. Certainly they grieved the loss of their mother, though the process was an expected one and Susan's death came as no surprise to the folks in Dayton. Yet even though death had been long expected, Susan's passing was a searing event for Milton. His sense of loss was deep, sharp, and lasting. Typically, we have no evidence of the reactions of the children, save that of Lorin who was caught by surprise in his Kansas outpost. The closest of all Susan's children in her final years rather unassumingly merged with his industrious younger brother and remained so for the next ten years until the flying machine became a new focus of activity. This initial merger was crucial for the effectiveness of their later working alliance, but the ultimate benefit was as yet unknown to the 27 year-old Wilbur who in 1894 approached his father with some thoughts about a career. Masking his self-doubts and his split loyalties to home and self-development in the accepted mantle of ill health, he lukewarmly concluded that he might like to be a teacher:

> "The bicycle business is fair. Selling new wheels is about done for this year but the repairing business is good and we are getting about $20 a month from the rent of three wheels. We get $8 a month for one, $6.50 for another, and the third we rent by the hour or day. We have done so well renting them that we have held on to them instead of disposing of them at once, although we really need the money invested in them. Could you let us have about $150 for a while? We think we could have it nearly all ready to pay back by the time you get home.
>
> I have been thinking for some time of the advisability of my taking a college course. I have thought about it more or less for a number of years but my health has been such that I was afraid that it might be time and money wasted to do so, but I have felt so much better for a year or so that I have thought more seriously of it and have decided to see what you think of it and would advise.
>
> I do not think that I am specially fitted for success in any commercial pur-

> suit even if I had the proper personal and business influences to assist me. I might make a living but I doubt whether I would ever do much more than this. Intellectual effort is a pleasure to me and I think I would be better fitted for reasonable success in some of the professions than in business.
>
> I have always thought that I would like to be a teacher. Although there is no hope of attaining such financial success as might be attained in some of the other professions or in commercial pursuits, yet it is an honorable pursuit, the pay is sufficient to enable one to live comfortably and happily, and (teaching) is less subject to uncertainties than almost any other occupation. It would be congenial to my tastes, and I think with proper training I could be reasonably successful.
>
> Of course I could not attempt a college course unless you are able and willing to help me some. I think that by keeping a couple of bicycles to rent and by doing some repairing, and possibly a few sales, enough could be made to meet the greater part of the expense, or at least enough to help along quite a good bit. I think with six or eight hundred dollars I could complete the course, which would probably take about four years. I would be glad to have you think the matter over and give me your advice on it."[9]

Milton agreed that "a commercial life will (not) suit you well" and offered to help Wilbur with the college fees, but Wilbur never followed through.

He maintained a quiet social life in Dayton, mixing his characteristic self-sufficiency with a mildly sociable conformity and involvement in conventional activities. When the national "safety bicycle" craze hit Dayton around 1890 he and Orville were swept up in it and made frequent trips far out into the countryside. Wilbur would write of these trips proudly to Katharine, then away visiting Reuchlin's family in Kansas, describing the mileage and time taken in an orderly, "log book" fashion much like that he would use later to record gliding data. "We started at 5:20," he wrote in 1892, "and got back at 7:20. Distance a little over 17 miles. We rode slow going out, but came back in about 45 minutes."[10] All this, of course, was wonderful therapy for a man emerging from a firm conviction of somatic weakness.

Though he was obviously in fine health, Wilbur refrained from bicycle racing at the YMCA (Orville did not refrain and was a good racer) and from other competitive sports. He belonged for many years to a men's social club with his

older brother Lorin - the Ten Dayton Boys - where he served as secretary, sang bass in the glee club, and eschewed athletics. Yet the value of his bicycling with Orville and benefit to his physical development and stamina must be noted. Those muscles most in use climbing, running, and launching gliders on the soft sand dunes of the Outer Banks were those most used in bicycling. (The stamina required can best be appreciated by a few minutes of running up and down these dunes.)

By 1901 Wilbur, at the age of 34, had acquired sufficient perspective on his youth to write a remarkably frank and insightful letter in which he reveals, though indirectly at times, his own blunt self-assessments. The circumstance was a visit by Reuchlin and his wife Lou (Lulu Bilheimer) and their children to Dayton, in which the Dayton Wrights were alarmed over the manner in which nephew Herbert was being dominated and overshadowed by his two sisters and his mother. To Wilbur fell the awkward task of "saying something" to Lou about this situation, which he did in a lengthy letter of June 18, 1901. In reading it, one can guess that he strongly identifies with Herbert and that to some degree he knew first-hand the boy's experience. One also sees the singular assuredness and lawyerly intellectualism that marked Wilbur's style after he came into his own with the challenge of manned flight:

> "... When you visited us last winter I soon noticed that the girls were a little disposed to move the boundary line between their rights and his, considerably over into what was justly his territory. I also noticed that this tendency was more marked when his parents or either of them were present than when they themselves would otherwise have admitted to be unjust. I could not see that either of his parents had any less affection for Herbert than for his sisters or that either you or Reuch seemed aware that there was any injustice in your decisions or settlements of their little disputes sometimes. I was very much puzzled to account for this phenomena (sic) for some time but on studying it out I found what I believed to be the solution. Herbert is by nature a little quieter in his disposition than most children. He is not at all aggressive even in maintaining his just rights. Now it is a natural law that all bodies tend to follow the path of least resistance and since a cessation of the uproar is the prime object of parents in dealing with children's disputes it is the most natural thing in the world that they should gradually and even unconsciously fall into the habit of giving decisions which will most quickly restore peace, and as in this case Herbert was the one who raised the least strenuous kick when a case was decided, it came about in

time that he came to get the short end in all cases where he was not clearly in the right. I never interfered even when I knew that you did not understand all facts in a particular case brought to your attention for decision. I sometimes felt that Herbert was rather imposed upon, but I did not consider that it would be proper for me to say anything and I would not now but for the purpose of explaining other matters. Besides I thought it was good training for the boy and would make all the finer man of him even if it was a little rough on him at times. To prevent misunderstanding I will say that I did not perceive much if any difference between your own and Reuchlin's course in such cases. The same natural causes led both to similar courses of action. Please understand that I am not presuming to blame either of you or even to assert as a fact that there is any blame or cause for it. I am merely explaining what led me to offer advice as to Herbert's life work and the preparation for it. I believed that the training he was at present getting was good for him and I did not intend to attempt to alter it. But when I saw what a bright manly little fellow he was I could not help wondering whether he would ever have a chance to develop his best qualities and choose a life work in which these qualities would be an assistance instead of a hindrance. When I learned that you intended to put him into business early I could not help feeling that in teaching him to prefer others to himself you were giving him a very poor training for the life work you had chosen for him, for in business it is the aggressive man who continually has his eye on his own interest who succeeds. Business is merely a form of warfare in which each combatant strives to get the business away from his competitors and at the same time keep them from getting what he already has. No man has ever been successful in business who was not aggressive, self-assertive and even a little bit selfish perhaps. There is nothing reprehensible in an aggressive disposition, so long as it it not carried to excess, for such men make the world and its affairs move. If Herbert were less retiring and more assertive than he is I would entirely agree to putting him into business early for that is the best training in the world for a business life and is the path which practically all the leaders in the business world have followed. I agree that a college training is wasted on a man who expects to follow commercial pursuits. Neither will putting a boy, who has not the aggressive business instinct, to work early, make a successful business man of him.

I entirely agree that the boys of the Wright family are all lacking in determination and push. That is the very reason that none of us have been (sic) or will be more than ordinary business men. We have all done reasonably well, better in fact than the average man perhaps, but none of us has as yet made particular use of the talent in which he excels other men. That is why our success has been very moderate. We ought not to have been business men.

Herbert has talent sufficient to make him really great, if given opportunity to exercise it, but he is not self assertive. You will probably have to choose his profession for him. If left to himself he will not find out what he would like to be until his chance to attain his wish is past. You may say that he ought to be more aggressive or that if he was really determined to be a great scientist or a great doctor or a great business man that he would find means to accomplish his end without assistance from his parents. But this is really saying that he must exercise talents that he has not got, in order to get a chance to develop talents he already has. If he would insistently demand help in

getting an expensive education you would find means to help him, but neither his disposition nor his training will lead him to do this. In any family those who ask most receive most, and while I had no objection to Herbert receiving a little less than his fair share of consideration as a child, I wanted him to have a chance as a young man, which these influences (which I have mentioned and which you probably would not have suspected had I not mentioned them), would have prevented him from obtaining. I feared that it would be then as now, easier to overlook his rights and interests than to incur trouble and expense.

If I understand Herbert he needs to be led and encouraged at first. You should give him a definite aim and not leave him to struggle for a living without any definite purpose beyond this. There is always danger that a person of his disposition will, if left to depend upon himself, retire into the first corner he falls into and remain there all his life struggling for a bare existence (unless some earthquake throws him out into a more favorable location) when if put on the right path with proper special equipment he would advance far. Many men are better fit for improving chances offered them than in turning up the chances themselves.

Affectionately,

Will "ll

This letter amounts to a ~~third-party~~ description of Wilbur's own psychology during his youth. It reveals an almost ruthless honesty and a wholly scientific willingness to capitulate to the power of facts. observation. This particular quality of ruthlessness in intellect, of cut-to-the-bone clarity in judgement, was a manifestation of the "new Wilbur", the Wilbur who emerged from his prolonged adolescence as a man whose most unifying and pervasive trait was a remarkably well-controlled aggressivity, which he did not hesitate to apply to himself as well as to others.

In June of 1901 when Wilbur sat down to intercede for Herbert, he and Orville were just days away from their second season of experiments at Kitty Hawk. Success was still indiscernibly and indefinitely in the future, and Wilbur had no idea that within two and a half years he and Orville would be the first men in history to power a craft under control into the air. Though he had his dreams and ambitions, and these had at last found a channel in the

problem of flight, he had apparently resigned himself to a career as a modest and modestly capable small-town merchant. There is something at once sad and powerful in his frank admission that life's conventional opportunities for advancement have passed him by at the age of 34. It is an indication of his immense self-control and self-denial - an aggressive disciplining of his own feelings, actually - that he could accept his fate in the bicycle shop even as he chased with equally aggressive self-discipline the unconventional goal of a flying machine. There was always in Wilbur something of the oddball and visionary, something most unordinary behind the bourgeois image which he embraced as his destiny. This made it possible for him to consider and settle on an unconventional, even ridiculed, pursuit as he looked regretfully at all the usual professions and opportunities which had slipped past him in his "lost decade".

This decade had been something of a developmental cocoon for Wilbur. As time passed and he grew into his late twenties, he seemed to care less what others though of his career choices and he became correspondingly more determined to strike out on his own. In the summer of 1896 Orville came down with typhoid fever. Perhaps it was partially the threat of being separated from the motive power of Orville's industry that prompted Wilbur to take special interest in his own dreams at this point. Or perhaps it was the fact that Otto Lilienthal and his brother had worked together on a glider with some success and much fame. At any rate, the news of Lilienthal's death reached Dayton at the height of Orville's illness when death once again hovered over the Wright home and stirred Wilbur into a realization of his inertia and dependence on others. This combination of events - Lilienthal's death and the threat of Orville's passing may have had some now undiscoverable but rousing effect on Wilbur, and from 1896 to 1899 he and Orville both read all the material they could find on aviation, or "aeronautics". It was

not until May of 1899, however, that Wilbur was psychologically prepared and determined enough to commit himself on paper to this activity. On May 30 he wrote to the Smithsonian Institution in Washington, D.C. requesting references on the subject of aeronautical research. He portrayed himself as an amateur whose efforts were nonetheless sober and properly second to his main business. "I am about to begin a systematic study of the subject in preparation for practical work to which I expect to devote what time I can spare from my regular business," he said. He then clarified his sobriety: "I am an enthusiast, but not a crank ... I wish to ... add my mite to help on the future worker who will attain final success."[12]

It is not very clear why it took Wilbur three years to summon the wherewithal to announce his goal and pursue it in organized fashion. Since he was, by his own assessment, someone who generally needed to be "pushed", it was perhaps necessary to be staring at the plateau of his third decade in order to experience the true alarm of time passing. Actually, we have little idea of the productivity or non-productivity of those three years for Wilbur. Certainly they were not wasted - he and Orville were actively engaged in reading and arguing various theories of flight at the time, and were impressed (but not intimated) by the difficulties encountered by the likes of DaVinci, Sir George Cayley, Hiram Maxim, Alexander Graham Bell, Thomas Edison, and Samuel Langley. One can only presume that for Wilbur, as for many ~~of us~~ others, the sense of being fully "ready" for dedication and commitment to a personal goal was something that just took some time, while a whole system of conscious and unconscious resources slipped quietly into place. Chief among these resources was, as mentioned above, Wilbur's own unique sense of power, control, and drive.

I believe his role as defender of his father, and the example of Milton's own righteous anger in the schisms and lawsuits that nearly destroyed his

bishopric, were crucial in shaping not only the quality of Wilbur's ambition but also the form which it took. The Wright anger, shared by Milton, Wilbur, Orville, and Katharine alike, was generally direct and confrontative, righteously self-assured, verbally polite but unsparingly blunt, and largely unyielding to compromise. We have seen the persistence with which the family fought the U.B.C. troubles and property claims. Such persistence characterized the invention of the flying machine as well as the prosecution of patent infringements by competitors. It was a lawyerly anger, never pouring over into rashness or physical expression, but fueling the fight at high pressure through the narrow nozzle of argument, counter-argument, logic, and incisive analysis.

From an indecisive adolescent to a sometimes harshly incisive man, Wilbur showed the positive as well as the negative effects of his righteous heritage. Even his humor was sharp, and he become known early on as a fine satirist. He wrote a piece in November 1894 for the brothers' weekly magazine "Snap-Shots", published for a time during their transition from printing to bicycling. The article reports an alleged conversation (fabricated by Wilbur as a satire) in a make-believe men's club called the Idlers' Club. The intent is to mock the decision of four members of a municipal authority to sue one Professor Robert - a real character - for libel after he criticized their use of funds for a public works project:

> "The libel suits recently instituted by the members of the B.C.A. against Professor Robert were the subject of quite an extended discussion at the last meeting of the Club. "Snap-Shots" representative was a little late in arriving, and accordingly found the Club up to its elbows in the question of whether the words imputed to Professor Robert - "The members of the Board of City Affairs, except one, are thieves" - were in fact libelous and whether the libelled individuals would be able to get damages.
>
> When he arrived the floor was held by a member whose busy moments in his earlier days were devoted to the pressing duties of the Justice of the Peace. He was explaining to the Club a few of the main features of the law of libel, in order that the members of the Club might discuss the matter intelligently. He said that before damages could be secured it

would be necessary to prove: 1) That the libelous words were actually given public utterance by the defendant; 2) that they were unquestionably applied to the plaintiff; 3) that the words complained of were really libelous in their nature.

The law having been laid down, the mathematical member rose to inquire why all four members of the B.C.A. had brought suits. He thought it was admitted by everyone that Professor Robert had libelled no more than three at the utmost. Yet here are four suits. He was inclined to sympathize with the Professor on this account, because he was evidently being falsely accused. He himself had not been able to prove the truth or falsity of the Professor's charges that three members of the B.C.A. were thieves, because he had not had an opportunity to add up the figures in their private bank books, but when all four jump on to Mr. Robert for $20,000 each, although one had been expressly excepted from the accusation, it was evident to any unprejudiced person that an attempt was being made to gouge Mr. Robert out of $20,000. For his part he questioned whether those who would thus attempt to cheat a fellow-citizen out of so great a sum were deserving of any better name than "thieves". He did not wish to pass judgement hastily in a matter on which he was not fully informed, but he could not help but admit that the B.C.A. were dealing dishonestly with Mr. Robert in bringing four suits, aggregating $80,000, instead of three suits, aggregating only $60,000.

Another member, well known from contributions to the Dayton papers over the signature of "Reform", said he was above all questions of mere money matters, but he wished to inquire which one of the four members of the B.C.A. was supposed to be the honest man. From the unanimity with which the accusation had been resented it would appear that all four had found the shoe more or less a close fit. He hoped the suits would be pushed to a speedy termination, in order that the honest member might be found, if possible.

The Higher Critic said he had been greatly surprised at the lack of business acumen displayed by Professor Robert in the matter. The manner in which he had claimed everything in sight of the river bed had led him to suppose that Mr. Robert would always get all he could for the money. But here, if reports are to be trusted, he had contented himself with calling only three of the B.C.A. men thieves, when it would have been just as cheap to apply the name to all four. This moderation was so entirely foreign to his character, as displayed in all the matters connected with the river bed fill, that it was his opinion that Mr. Robert had really included all four in his statement, and that the words "except one" were an interpolation, probably introduced by someone for the purpose of flattering the member of the B.C.A. to whom the matter was first reported. The fact that after investigation all four members brought suit further tended to confirm the correctness of this hypothesis.

Another member said he had wondered much in what order the suits would be taken up, as it was evident that if justice were done the fourth man would not get a cent, while his three fellows would be gloating over $20,000 each. He had his doubts whether there was any member of the

B.C.A. who would quietly allow $20,000 to slip through his fingers. He suggested that they should either draw cuts for first turn in court or else lump the damages and take fifteen thousand each.

Another member thought that the B.C.A. members had brought the suits just as a "bluff", and that each was more anxious to have the public believe himself the one excepted by Mr. Robert, than to revel in the spoils of Mr. Robert's money bags. It was his opinion that when the cases come up for trial each member of the B.C.A. would have such a strong array of witnesses to his snow-white character, and be represented by such brilliant counsel, that the jury in each case would find the plaintiff the one whose lamb-like purity and honesty had so excited the admiration of Mr. Robert, that, even in the heat of indignation, he paused to except him from the general accusation of thievery; and that, as a result, Mr. Robert would enjoy the luxury of calling 75 per cent of the B.C.A. thieves without paying a cent. This speaker further said that he rejected as unnatural the hypothesis advanced by a previous speaker that Mr. Robert had really called all four members thieves. If he had really applied this opprobrious epithet to all four he would have driven them to desperation, and left no escape either for them or for himself. But by excepting one he left an avenue of which both he and they would, no doubt, avail themselves.

Another member of the Club could see in the whole proceeding only another illustration of the evids of monopolies. The attempt of each member to monopolize the honour of being the only reputed honest member of the Board was likely to result in another failure of justice. For his part he wished to be put on record as a friend of the laboring man.

The poet now arose, and, unrolling a great package of manuscript, began to read a poem after the style of the Iliad and the Aenead, in which the heroic actions of the parties to the legal fight are set forth in blank verse. We confess with shame that before one-half had been read our nodding head was given over to sleep, but the energy and spirit with which he recited the closing song which the B.C.A. quartette are supposed to sing in honour of the closing of the affair aroused us in time to catch the final verse, which we gladly reproduce: -

"Yes, four are we of the B.C.A.,
And for calling us thieves he'd surely pay.
But he left one out
So the jury, in doubt,
Found all of us honest, they say."[13]

The scenario of accusation and defense was a familiar one to Wilbur, and would become even more so in his final years as the whole issue of propriety over invention of the flying machine became the subject of a hundred contentions. In the above article, incidentally, we cannot help but note his superb writing

style in the fanciful manner of a "gossip columnist", the cleverness of the whole composition, and the creativity in the notion of the "Idlers' Club". To be sure, it is a slight case of overkill for the B.C.A., whoever they were, and one wonders whether this petty skewering of local officials is worth the effort. But it does give an idea of Wilbur's wit, his intelligence, his command of logic and language, and his independence of mind. He was probably as suited to law as science, actually, and it is interesting to observe how rapidly he gave up flying once the Flyer had achieved success and the Wright Company was established. With legal advice, he became almost totally absorbed in the masterful supervision of patent infringement suits. Of the two brothers Orville was the only one who ever flew for the simple pleasure or sport of it, and of the two, Wilbur was the most likely to deny himself pleasure in the service of reason and practicality.

MATURITY

I have stated that some quality of aggression was a dominant feature of the man Wilbur Wright, and have implied that the full realization of his power and potential was linked in a very important way to an assimilation of the Wright trait of righteous anger into the "good boy" role had usually fulfilled in the home. This took a long time, but the effect seems to have been a powerful one. As a man Wilbur was all the things he had been as a boy, but in addition and for all the world to see he was also coldly confident, morally assertive and courageous, independent in judgement, exacting towards others regardless of their position or rank, sharp in his wit, orderly, methodical, and almost hypercritical in his control of emotion and his perception of solutions to the problems of living. His earlier quietness had brought forth immense powers of observation. He was a man of strong but considered

opinion, single-minded determination, and eager competitiveness, in contrast to his former avoidance of competition. It is not enough to say that these qualities arose in simple compensation for years spent in infirmity, though to some extent that is indeed true. One must credit Wilbut with a certain will as well. Much of his self-renewal and formation in the years 1885-96 was the result of a conscious self-discipline and self-analysis, the details of which would chronicle a remarkable story of self-mastery. Unfortunately, they were never recorded.

It is also not enough to lump all these character traits under the term "aggression". Aggression - call it driving energy, power, motivation, will, a sense of action and the force to act - is merely a general theme in a number of traits which we shall now explore in the adult Wilbur Wright.

MASTERY OF EMOTION

If aggression is power applied, and asceticism is power exercised over the self, then asceticism represents an application of aggressive energy inward. It is a common enough response of "good boys" to the impulses of adolescence, and in a curious fashion it creates a sense of power and well-being through self-denial and even physical discomfort. There are two correlates of an ascetic adjustment which interest us here. The first is that great energy is created not simply by the tension of contained drives, but also by the accelerating need of the ascetic to rise above his needs and seek new highs of physical self-discipline and domination over the impulse life. The second correlate is that hostility is generated, basically for defensive reasons, towards persons (such as the opposite sex), situations (such as those which encourage expression), and things (such as alcohol, pornography) which pull the person away from ascetic stringency.

By these standards, the invention of the airplane was an act of true asceticism for Wilbur, but it was the culmination of what had been many years of self-discipline and self-denial for this product of late-Victorian parents, one of whom at least had thundered long and loud for the spiritual doctrine of man's innate moral depravity. Wilbur took his own psychological and moral life quite to heart and managed to live his forty-five years on this earth, including three years of nearly continuous contact with "decadent" Europe from 1907-1909, without tasting more than a glass of wine, puffing so much as a whisper of tobacco, or touching a woman. I am sure that he never danced a step in his life. Of his morality we will speak later - Orville was very similar in his habits - but for now we will note the self-discipline, the act of life-long will, the mastery over the senses that reigned in the psyche of Wilbur Wright. He would never disappoint his father who in 1907 wrote to his two sons, negotiating in Paris for the sale of their airplane to the French government,

> "I am more and more convinced that 'the carnal mind is enmity against God!' ... Men are only big boys. Alas! Human depravity! Few have the mind which was in Christ Jesus - the mind to sacrifice and to suffer for the good of others."[14]

When one looks simply at the rather narrow morality implied in the religion of Bishop Wright and, for that matter, in much of nineteenth-century religion in America, one tends to see the brake pedal, as it were, of the great American spirit. But there were accelerating spiritual forces at work as well, and in the odd mix of puritanism and indulgence which in Thanksgiving style characterizes Americal morality to the present day, the ascetic religion of the Wright home exempted from its rigor vast areas of human endeavor and enterprise which were then free to capitalize on a wealth of libidinous and aspirational energies. The very narrowness of the prohibitions allowed plenty of room to maneuver in society, provided one did not, for example, smoke, drink,

or lust after sex while pursuing one's own manifest destiny.

This is why the goals of "fame and fortune" were not put off limits by the conscience of the Wright home, and why - with the exception of Katharine, whose sec alone largely defined her life pattern - Orville and Wilbur felt free to throw their energies into any activity of their choosing, even a faintly "quack" one like flying. The character type of the moral self-denier, the private ascetic whose drives roar publicly through the business or professional world accumulating vast but somehow irrelevant fortunes - this type is fairly common in American success stories, and it seems to have been to that ideal that Wilbur aspired. It was no accident that twenty-five years after his death, the old Wright Cycle shop and the Hawthorn Street home were moved and enshrined in Henry Ford's museum as totems of the Humble Beginning and monuments to the Upright and Enterprising Life.

Energetic self-denial to the point of discomfort and deprivation are characteristic of missionary enthusiasm, and it was this persistence, this "ascetic high" of self-conquering rather tha, say, the simple doggedness of a good salesman, that marked Wilbur's contribution to the airplane. The rough trips to Kitty Hawk every year from 1900 to 1903 seemed to the Wrights to be a positive vacation from life in Dayton. Wilbur in particular was rejuvenated by the stark freshness of the place - earth and elements stripped of any juices, salted and baked clean in the unforgiving sun. The Kitty Hawk experiments were physically demanding and were an intellectually unique task for which the Wrights felt especially equipped. The rigor of setting with the sun and rising with the gulls appealed to their sense of what a vacation should be. On his first trip across Albemarle Sound from the North Carolina mainland at Elizabeth City to the barrier reefs of the Outer Banks at Kitty Hawk, Wilbur went without food for 48 hours (save a jar of Katharine's home-made

jam), nearly drowned in a violent storm which threatened to wreck Israel Perry's vermin-infested and rotting schooner, and slept on the open deck for two nights. Yet in spite of this he wrote a humorous letter home describing in circus-bill style his passing through "storms and terrors by day and by night, ... privations of hunger and thirst, ... bloodthirsty beasts, etc."[15] Wilbur's own notes are best able to convey his baptism into the world of independent aeronautical investigation:

> "Left Dayton Thursday evening at 6:30 P.M. over Big Four and C&O. Arrived at Old Point about six o'clock P.M. the next day, and went over to Norfolk via the steamer Pennsylvania. Put up at the Monticello Hotel. Spent Saturday morning trying to find some spruce for spars of machine, but was unsuccessful. Finally I bought some white pine and had it sawed up at J.E. Etheridge Co. mill. Cumpston Goffigon, the foreman, very accomodating. The weather was near 100 Fahr. and I nearly collapsed. At 4:30 left for Elizabeth City and put up at the Arlington where I spent several days waiting for a boat to Kitty Hawk. No one seemed to know anything about the place or how to get there. At last on Tuesday left. I engaged passage with Israel Perry on his flat-bottomed schooner fishing boat. As it was anchored about three miles down the river we started in his skiff which was loaded almost to the gunwhale with three men, my heavy trunk and lumber. The boat leaked very badly and frequently dipped water, but by constant bailing we managed to reach the schooner in safety. The weather was very fine with a light west wind blowing. When I mounted the deck of the larger boat I discovered at a glance that it was in worse condition if possible than the skiff. The sails were rotten, the ropes badly worn and the rudderpost half rotted off, and the cabin so dirty and vermin-infested that I kept out of it from first to last. The wind became very light, making progress slow. Though we had started immediately after dinner it was almost dark when we passed out of the mouth of the Pasquotank and headed down the sound. The water was much rougher than the light wind would have lead us to expect, and Israel spoke of it several times and seemed a little uneasy. After a time the breeze shifted to the south and east and gradually became stronger. The boat was quite unfitted for sailing against a head wind owing to the large size of the cabin, the lack of load, and its flat bottom. The waves which were now running quite high struck the boat from below with a heavy shock and threw it back about as fast as it went forward. The leeway was greater than the headway. The strain of rolling and pitching sprung a leak and this, together with what water came over the bow at times, made it necessary to bail frequently. At 11 o'clock the wind had increased to a gale and the boat was gradually being driven nearer and nearer the north shore, but as an attempt to turn round would probably have resulted in an upset there seemed nothing else to do but attempt to round the North River light and take refuge behind the point. In a severe gust the

> foresail was blown loose from the boom and fluttered to leeward with a terrible roar. The boy and I finally succeeded in taking it in though it was rather dangerous work in the dark with the boat rolling so badly. By the time we had reached a position even with the end of the point it became doubtful whether we would be able to round the light, which lay at the end of the bar extending out a quarter of a mile from the shore. The suspense was ended by another roaring of the canvas as the mainsail also tore loose from the boom, and shook fiercely in the gale. The only chance was to make a straight run over the bar under nothing but a jib, so we took in the mainsail and let the boat swing round stern to the wind. This was a very dangerous maneuver in such a sea but was in some way accomplished without capsizing. The waves were very high on the bar and broke over the stern very badly. Israel had been so long a stranger to the touch of water upon his skin that it affected him very much.[16]

Ten days later, with Orville still four days away from joining him, Wilbur wrote to his father,

> "My trip would be no great disappointment if I accomplish practically nothing. I look upon it as a pleasure trip pure and simple, and I know of no trip from which I could expect greater pleasure at the same cost."[17]

With the exception of the 1901 season at the shore, when the Wright glider's poor performance seemed to undercut all their previous work and cast doubt on their calculations, Wilbur's spirits soared at Kitty Hawk. His letters home, especially to Katharine ("Hey! Hey! Sterchens," he begins one 1902 letter in the slang of the day and with uncharacteristic exuberance) are buoyant, eager, and humorous. It fell to Orville to tell Katharine of the interminable sandiness and bleakness of the place and the inadequacy of the foodstuffs available. It was not until April of 1908, when Wilbur returned to Kitty Hawk under great pressure to polish up his flying skills (Orville joined him after camp was set up) prior to departing for the French exhibitions at LeMans, that we see how trying the harsh climate, scarcity of ready well water, meagreness of food, and general lack of amenities could be. Even an ascetic could derive little pleasure from diarrhea and fatigue. Moreover, Wilbur was now 41 years old.

At this later date in his life, Wilbur had far less to prove by surviving a harsh climate than he did by selling the world's first and only effective

flying machine to a major government in Europe, and by surviving the machinations of competitive business interests.

The unrelieved dunes of Kill Devil Hills - even the name itself - stand out in Wilbur's life as a sort of pristine court in which a sensitive and cautious Midwestern man tried out his own competencies as much as those of an equally deceptive-looking glider. So much was this a personal mission for Wilbur that it was not until September of 1902, in their third season of gliding at Kitty Hawk, that Orville made his first glide. Wilbur had up to then taken all the chances in spite of what was no doubt an eagerness on Orville's part to join in and share the risks and pleasures. With patience and deference toward his older brother, Orville unquestioningly waited for the moment when personal need would recede and a more fraternal sharing of the action would evolve naturally from the intellectual and craftsmanlike bond they had already forged. There was apparently a rather strong drive on Wilbur's part for physical action and challenge of a very visceral sort during these early gliding years. Though always tempered by a practical and serious consideration for personal safety, his drive to conquer fear, physical inhibition, perceived limitations on his "weakened heart", and the sense of time having flown past him launched Wilbur off the dunes and out over the sands during the 1900 and 1901 seasons. It was compensation for a grounded past, but it was also the cashing in of years' worth of ascetic chips. Years spent in self-denial and visceral timidity, in sacrifice for others, had coiled Wilbur's energies in a disciplined but essentially repressive way. When hooked by the adult vocational ideal of the technical/scientific investigator, and then sprung by the anxieties of passing time and lackluster achievement, these energies were released with sufficient force to redirect Wilbur's ascetism in a very dynamic, expressive direction.

There was a more unpleasant correlate to this whole developmental process, unpleasant for Wilbur, no doubt, as it was to any women who may have wished to know him more closely. Throughout his life he maintained an attitude toward women which was rather predictably split between conviviality and warmth for older women and hostility or shyness toward younger women. There is no profundity in the interpretation of this split. Any women perceived as possibly sexually arousing merited the wrath of ascetic stringency, while women seen as essentially "non-sexual" (e.g., motherly or matronly) could be warmly received and trusted. It is the story of a man who never really engaged the adolescent tasks of attachment and intimacy beyond the family circle. Having foreclosed on this aspect of his development out of, among other things, an overidealized dedication to his dying mother and the moral ideals of his father, he transferred these feelings to his sister Katharine who assumed the emotional role of wife to Milton and mother to "the boys". He also allowed his intimacies to be circumscribed by a fierce family loyalty which had grown hot in the UBC controversies and which closed ranks tightly when Susan died. She left a husband who was emotionally strong but who placed enormous personal value on domestic life and on his relationships with his children. The cost to Katharine was great, but the cost to Wilbur and Orville was substantial also. The benefit to the world, however, may well have been the airplane itself, whose development received the undivided attention of the industrious bachelors from Dayton.

The Wrights' bachelorhood has always elicited some psychologizing from modern observers, and I will add mine at the risk of implying that such a state requires any special explanation at all. Actually, with the Wrights it was more than bachelorhood. It amounted to celibacy. They were reported as saying that "You can't have a wife and a flying machine, too," implying that somehow the demands of domesticity ( which, incidentally, had never restrained

their father from active pursuit of his duties) would preclude serious scientific investigation. A 1907 New York Herald interview ascribed to one of them (it did not say which brother) the ~~"Catch-22"~~ conundrum that "women would be likely to object to their hazardous experiments, and that women who did not object to such experiments as were necessary in perfecting an airship would not be worth having."[18]

The notion seems to repeat itself in Wilbur's infrequent mentioning of the subject that women - sexually available or potentially available women - are dangerous. He exempted his sister's college friends from any hostility, but he always had some teasing remark to keep them at a distance without fully or rudely putting them off. From Kitty Hawk in 1903 he wrote a "P.S." to a letter to Katharine in which he delivered a rather ~~awkward~~ strikingly humorous jibe at her friend Harriet Silliman, whose broken fountain pen he had found, ~~its way into his possession~~:

> "Next time you write to Harriet I wish you would tell her that in my opinion a person who leaves such a fountain pen as this lying around for someone to steal is on a par with the man who doses watermelons in his patch, or leaves a wheelbarrow sitting in front of the door without any red light on it."[19]

Overt hostility as such was not very evident in Wilbur unless he was under great stress. When he and Orville became internationally famous in 1907 and 1908 he grew proportionally suspicious of all attention paid him. Under the strain of practicing at Kitty Hawk in May of 1908, and eager to convince a skeptical France of the Wright machine's worth, he expressed his competitive spirits to sister Katharine in an odd piece of displaced spleen: "I would," he declared, "that I could see the Paris gowns and the good for nothings that wear them."[20]

In July 1908, Albert Zahm, once an aeronautics professor at Notre Dame and then at Catholic University in Washington, D.C., offered to introduce Wilbur to

an attractive heiress. Wilbur was at the time not particularly suspicious of Zahm (later he would have good reason to be), but his response to the matchmaking effort was flat. Responding to Orville's taunt ("I had half a notion to accept the proposition for you. My power of attorney seems of little use for anything else!")[21], he wrote Katharine, "When Orville gets down to Washington I fear my chances will be gone, so far as the young lady is concerned. But I will console myself with the thought that 'My loss is his eternal gain', as they say at funerals."[22]

Intrafamilial teasing on the issue of extrafamilial attachments was common in the Wright home and often served as a joking reminder of proper loyalties. In 1907 Milton, nearly 80 years old, joked to his sons in Paris when a local Dayton maid was married at the age of 40: "Moral: Wilbur should not despair."[23]

The real humor derived from the idea that Wilbur would feel anything like despair at the prospect of never marrying.

Wilbur's feelings were plain, but the more sociable (at that time, anyway) Orville deserved special watching at vulnerable times. When he was hospitalized at Ft. Meyer following his 1908 crash there, Wilbur wrote to Katharine from Le Mans:

> "Orville has a way of stepping right into the affections of nice people whom he meets, and they will be nice to you at first for him and then for yourself, for you have some little knack in that line yourself. I am glad you are there to keep your eagle eye on pretty young ladies. I would fear the worst, if he were left unguarded. Be careful yourself also."[24]

And two weeks later he wrote to Orville,

> "...I hope you are doing well, and that you will not be seriously lamed. I understand that it was your right side that was injured, but I have cautioned Kate to guard against internal injuries under the ribs of your left side. Hospitals are awfully dangerous places for bachelors."[25]

In this allusion to "heartache" we might speculate about Wilbur's own life-long conviction that his heart was weakened by an injury at age 18, and

whether the whole notion of dependence and intimacy had become associated before or after with a crippling vulnerability. His own somatic concerns had been resurrected momentarily three months earlier when a cooling hose ruptured at Bollee's factory and scalded his left arm and side on July 4th, the nineteenth anniversary of his mother's death. Certainly Wilbur was frightened by the prospect of any intimate relationship of a sexual sort, and was probably just as frightened by his sensitivity to anticipated separations or rejections as he was by any moral scruples about sexuality. The loyalty, devotion, and affection he demonstrated within his immediate family were never allowed to branch out very far into the unknown territory of strangers, especially women.

The poignancy of Wilbur's self-denying renunciation of love was highlighted in a tawdry press imbroglio in 1909 while he was still in France. The incident grew partly out of French incredulity at Wilbur's apparent indifference to women (a popular cartoon postcard of the day featured a thin, Savonarola-like Wilbur absorbed in stitching canvas on an airplane wing while a group of portly Europeans looked on - a lone woman stands off in the distance, her rejected back to the industrious aviator[26], and partly out of a sensationalist press temptation to capitalize on his high moral reputation by smearing it. On January 8, the wire services put out a story that Wilbur was being named in a divorce suit by a Lieutenane Goujards of the French army, who claimed that his wife had spent a week with Wilbur at a Le Mans hotel on a "wager with a friend that she could captivate the heart of the American."[27] The Dayton Herald printed the story in Wilbur's home town. The news account ascribed the suit to jealousy and warped judgement by Goujarde, whose imagination had apparently carried him away from the simple interest his wife held in aviation. The story as carried in the Herald was prefaced with the caution, "Of course nothing is known of the fact here", but lack of facts did not inhibit the reporter, as Wilbur angrily pointed out a month later.

At any rate, in the next day's Herald it was reported that inquiries concerning the facts of the case turned up no such divorce suit, no Lietenant Goujarde, no regiment posted to LeMans, and no wife. The whole story had been a fabrication and Wilbur might well have allowed it to die quietly.

But that was not Wilbur's style. Overblowing the incident as an "infamous outrage", Wilbur attacked the Dayton Herald in a February 9th letter to the editors of the Dayton Daily News:

> "I learn that one of the daily papers of my own home city was guilty of publishing the libelous fake story that I had been named as co-respondent in a divorce suit. The people who had a hand in the concoction and publication of this outrageous lie will be punished, but meanwhile I wish the people at home to know directly from me that the imputation was absolutely without foundation. No such suit has ever been brought. No one has complained of me either in court or out of it. I have never given anyone cause for complaint. I have never been under suspicion....My bill of health is absolutely clean.
>
> The French people seem to be amused that I do not smoke or drink wine, and their caricaturists, for a joke, accordingly usually represent me with a pipe in my mouth. A similar vein of humor may have been the original inspiration for the story that I was concerned in a divorce case, though the chief motive seems to have been a wish to make money by inventing a story that could be sold to American newspapers. The reliable news agencies investigated the story and refused to bite. Another kind, apparently, had no wish to spoil a sensational story by investigation before publication. Their subsequent corrections and pretended apologies do not go with me in view of the infamous outrage they were so forward in perpetrating. There was no excuse whatever for besmirching my good name. It will be a scandal if the local paper which published such a lie about a man who has tried to bring honor rather than dishonor to Dayton, goes unpublished by public opinion. Such a paper does not deserve the support of Dayton people."[28]

Wilbur's relations with the press ~~and the grace with which he could bear the abuses of notoriety~~ suffered a serious setback with his righteous response to this gratuitous rumor. Yet we learn something of the tremendous emotional cost to Wilbur of his self-imposed asceticism by his pained ~~response~~ reaction to that rumor. And we see that his response to pain was no longer a quiet invalidism but an acerbic combativeness born of a strict sense of justice in human relations - a sense of incorruptible decency.

The French evidently thought Wilbur at first too good to be true, but then

his successful flights at Le Mans in August 1908 quickly elevated him to hero status. A professor and aviation writer met Orville shortly after Wilbur's death, and wrote recalling the French attitude:

> "The French regarded Wilbur, with his gaunt form, his weather-beaten face and piercing, hawk-like eyes, with reverence and awe. They thought him curiously like an eagle. In the midst of excitable and talkative continentals, he appeared quiet, taciturn."[29]

They wrote of "la tenacite tranquille qui a conduit Wilbur Wright au succes."[30] The mechanic's cap which Wilbur wore while flying became the rage of France and a haberdashery symbol of the new aviation age. "Vreecht" caps were sold everywhere, and the image of a quiet "mechanic" sleeping humbly in the shed with his craft (he did so largely to prevent saboutage and vandalism) ultimately captured the French imagination more dearly than had the Goujarde tale.

Wilbur's life style at Le Mans was not much different than that at Kitty Hawk, but now the contrast with his fame and the magnitude of the accomplishment threw it into sharp relief. Griffith Brewer, an English friend, recalled in 1916 that

> "The simple life had great attractions for Wilbur Wright. A piece of stout canvas nailed between two pieces of 2 in. by 3 in. wood supported at their ends on the rafters of the shed containing the machine, formed the bed on which he slept, and often at five in the sparkling September mornings he was to be seen taking an early cold water wash while the water for the coffee was on the boil.
>
> ...When in Paris, just before the visit of Wilbur and Orville Wright to England, when they received the gold medals of the Aero Club and the Aeronautical Society, and were feted by both those bodies, I was describing some of the people to Wilbur whom he would meet in England. Of one I said that he would at once recognize him as being the ugliest man at the Aeronautical Society, and my rudeness was quietly reproved by his replying that the member of the Society would lose that distinction on this occasion because, as he said, "There will then be a pair of us."
>
> Discussing happiness one day, Wilbur remarked that most enjoyment in life consisted of relief from discomfort. To try to be always comfortable and happy was therefore a mistake, for if one succeeded life became unbearably monotonous."[30]

The ascetic kernel of truth in Wilbur's philosophy must be taken with a grain of sympathy for the quiet feeling of resignation, even depression, which sometimes underlay it. In August 1888, just a year before his mother died, he had written to his father,

> "Mother is a little better than she was. The rest are well ... School begins next week and mother is happy.(?)"[31]

He had written a declarative sentence about his ailing mother's happiness and thus he added a question Mark which almost immediately he perceived as inadequate to explain her feelings. He would always remain ~~thus~~ tentative and sometimes ~~even~~ cynical about achieving happiness in this life. Apparently he also believed himself to be an unattractive man physically. He was prematurely bald, and his upper lip was always a bit stiff after the corrective work was completed on his mouth in 1885. Perhaps this too - the anticipated rejection - explains some of his hostility towards women. He opted for the ascetic inner life, for the satisfactions of righteousness and intellectual accomplishment, and made a point of paring life down to basics. The physical ordeals of developing the airplane allowed him to solidify a sense of his own bodily competence, but this never carried over ~~nor was expected to carry over~~ into any social or heterosexual areas.

In December 1908, Claude Graham-White, an English aviation enthusiast who was later sued by the Wrights for patent infringement, visited Wilbur at Le Mans with some friends:

> "When the party reached Wilbur's hangar, they found it to be a simple shed, built of boards, one corner partitioned off like a loose box, furnished only by a turckle-bed in the corner, a bicycle, two chairs, and a common little deal table. Wilbur slept there under conditions minus all the comforts of modern life. He had to keep an eye on his beloved aeroplane. His affection for his aeroplane resembled that of a parent for his child. The Wright biplane struck Graham-White as an apparently simple mechanism ... but ... all the essentials were there. Wilbur Wright simply was not a showman. He flew, but did not try to impress the public with nickel-plated beauty in his machine."[32]

If Wilbur felt affection for any of his machines, and such affection may

have been evident in some way to observers, it was not an emotion that he indulged or admitted to others. He slept with his machine to prevent sabotage, to prevent photographers from recording the details of its construction for the benefit of the press or for French competitors, and because doing so was an inexpensive form - and a comfortably asocial one at that - of lodging. Sleeping in the shed was a pragmatic act, not a sentimental one.

The Wrights had never been wealthy and were raised to be thrifty and conscious of unnecessary expense. When wedded to Wilbur's ascetic self-denial, this thrift became a determined pragmatism toward food, shelter, and clothing, ~~This attitude was ruthlessly~~ unsparing of any sentimental attachment. Charles Taylor recalled in 1948 that

> "In 1916 we took the Kitty Hawk plane out of storage and fixed it up for its first exhibition at M.I.T. Cambridge, Massachusetts ... Roy (Knabenshue - an early Wright flyer) tells how he approached Wilbur early in 1912 and asked him what he was going to do with the Kitty Hawk and Wilbur told him, "Oh, I guess we'll burn it; it's worthless." Roy argued it was historic and finally talked him out of destroying the plane."[33]

Even the name of the original plane was pared down - "The Flyer", it was called, with subsequent models being differentiated only by Roman numerals or model designations, as in "Model B", or "Model C". The name "Kitty Hawk" now given to the 1903 craft was attached not by the Wrights but by a public more in need of sentimental feeling, and perhaps even more endeared to the machine, than the Wrights themselves. Even the first glider-kite used on the Outer Banks by the Wrights in 1900 was given to Mrs. Dan Tate when the brothers returned to Dayton, with no instructions except perhaps to keep the specifics of its construction quiet. This proved no great difficulty for the hardy Kitty Hawk woman, who immediately converted the linen wing coverings of this useless toy into dresses for her two daughters.

The harshness of Wilbur's practicality is reminiscent of his father who,

in anger at Katharine's leaving him to join Wilbur in Europe, wrote to her in 1909, "It does not make so much difference about you, but Wilbur ought to keep out of all balloon rides. Success seems to hang on him, in aeroplane business."[34]

Finally, while it is difficult to imagine that there were no thrills or pleasures for Wilbur associated with flying, a biographer of Orville reported that "despite his serious accident, Orville afterward continued to enjoy flying for the sport of the thing. Wilbur, after his first few flights, would just as soon have stayed on the ground; he flew only for business reasons."[35]

Wilbur's psychological core was a thorough self-discipline which armored his sensitivities and produced a uniquely single-minded life of work and self-denial. At its best that life was a pristine model of simple humility and ascetic self-sufficiency - a life in technological cloister. On the other hand, Wilbur tended to have the faults of many self-deniers. He was righteous, overly guarded, reclusive to the point of mistrust, disconcertingly zealous at times, intolerant of emotion, which he equated often with weakness, and ultimately a rather lonely figure with a limited range of intimacies and enjoyments.

MASTERY OF THE MIND

It is always difficult to separate mind from feeling, but if one can say that Wilbur's discipline of his needs and emotions was aggressively ascetic and thorough, one can argue, as I will, that his intellectual talents were shaped as well by a rigorous self-mastery and control. The result was a powerful intellectual ambition - "la tenacite tranquille" - and a concentrated mental absorption which often appeared as absent-mindedness or preoccupation.

> "When absorbed in his thoughts, Wilbur, more than Orville, was inclined to be oblivious of his surroundings or of whatever he was doing. Sometimes he would slowly pace the floor with hands clasped behind him humming a popular song, and there were often long lapses between words. Once he was softly singing, "The flowers that bloom in..." and after a minute or so one of his nieces yelled: "Uncle Wilbur, aren't you <u>ever</u> going to say <u>Spring</u>?"[36]

Carrie Kaylor recalled Wilbur's methodical routine at mealtimes when he and Orville were working in the bicycle shop:

> "When he came home from the bicycle shop at noon and for supper he would always do these things and in this order: come through the back door and into the kitchen and drop his hat on the nearest chair; reach to the top of the cupboard where he kept a comb and carefully smooth down his fringe of hair; and then cross to the sink to wash his hands. After that he would go directly to a cracker box on the dining room sideboard, pick out one cracker and nibble it as he went to the front of the house. That was a signal to set food on the table.
>
> Promptly when the noon hour was over, Mr. Will would come through the kitchen, looking straight ahead and saying nothing. He'd go out the back door and down the alley. But in a minute he'd come back, with a queer little one-sided smile, for his hat. Mr. Orville, on the other hand, never once forgot his hat; and no matter what was going on around him."[37]

Wilbur had an accountant's eye for detail - it was he who had spotted irregularities in the Rev. Keiter's books for the U.B.C. in 1897 - and a mathematician's faith in the value of exactness. He and Octave Chanute, for whom quantification exercises had become something of a narrow passion in his later years, wrote to each other frequently in the years 1900-1903, and the content of most of these letters is almost exclusively technical or mathematical data. By the time he got to Paris in 1907 Wilbur had developed a near habit of quantifying all his experience - the amount of time spent in the Louvre, or the fare of a boat ride. In 1950 General Henry Arnold recalled in his early Army flight training in 1911 with the Wrights that "Wilbur ... often hesitated to give an opinion without first consulting the little black notebook of aeronautical data he always carried with him." This was not so much an obsessional dependence on trivia or routine as it was the disciplined attention of the mind towards careful and accurate observation. General Arnold continues,

> "Once, I remember well, a loud argument was in progress about just how the loop would be accomplished - a time we hoped was not far off. Opinions differed as to whether it would be done from "the inside" or "the outside"; as to just how the airplane would behave. The Wright brothers listened with interest, never saying a word. Then, as everyone was laying down the law about this or that approach, Wilbur quietly attracted our attention and pointed overhead. In the slightly windy air far above the top of the shed,

> a lark was fighting hard to fly straight upward, and as we watched, the bird struggled over on its back and curved down again, coming out in level flight from a crude but indisputable loop."[38]

The wind tunnel experiments which Wilbur and Orville conducted in 1901 are models of scientific engineering method and introduced a degree of precision into aeronautical research which until that time had been regarded as unnecessary. It was also a pragmatic thing to do, rather than relying on armchair calculations and deductions. The tunnel was of simple but solid construction and the room in which the experiments transpired was maintained in an "as is" condition for the duration of the tests. No furniture was moved, and Wilbur and Orville themselves stood in exactly the same spots each time a new set of model aerofoils was tested, "as very little is required to deflect a current a tenth of a degree, which is enough to very seriously affect the results."[39]

Wilbur's insistence on an orderly approach to understanding things grew out of his no-nonsense attitude towards work, which seems in large part to have determined the tenacious quality of his mental discipline. Almost every decision he made required some sort of intellectual or pragmatic rationale. When considering entering the St. Louis Aeronautical Exhibition of 1904, he wrote Chanute,

> "Whether we shall compete will depend much on the conditions under which the prizes are offered. I have little of the gambling instinct, and unless there is reasonable hope of getting at least the amount expended in competing I would enter only after very careful consideration. Mathematically it would be foolish to spend two or three thousand dollars competing for a hundred thousand dollar prize if the chance of winning be only <u>one</u> in a hundred."[40]

And in 1906, in trying to explain to Chanute that there was small chance of any competitors producing a saleable airplane while the Wrights held theirs off the market, he argued, oddly enough, that it was circumstance and probability more than intellectual talent which had led them to success, and that the odds of these circumstances occurring again, even for the Wrights, were very slim. It

was a curiously intellectual argument against the power of intellect:

> "If the wheels of time could be turned back six years, it is not at all probable that we could do again what we have done. The one thing that impresses me as remarkable is the shortness of the time in which our work was done. It was due to peculiar combinations of circumstances which might never occur again. How do you explain the lapse of more than 50 years between Newcomen and Watt? Was the world wanting in smart men during those years? Surely not! The world was full of Watts, but a thousand and one trifles kept them from undertaking and completing the task. I do not doubt that the world today contains hundreds of men as able as Napoleon but, if a war should break out, I would consider it safe to bet a thousand to one that a second Napoleon would not appear. We look upon the present question in an entirely impersonal way. It is not chiefly a question of relative ability, but of mathematical probabilities."[41]

It was perhaps the height of self-denial to reduce so harshly the uniqueness of his talents and his contribution to the interchangeable quality of a cog in some impersonal wheel of historical probabilities. But if Wilbur was exactingly hard on himself he was equally perfectionistic towards others, and though overtly patient for the most part with their mistakes, he was capable of sharp criticism when fatigued or under stress. His months in Europe were such a time, off and on from 1907 to 1911. "They are such idiots!", he exploded in his diary about the French mechanics who were building his engine for the 1908 premier flights, "and fool with things that should be left alone. I get angry every time I go down there."[42] To Orville he wrote of Charles Taylor's work, "Tell Charles Taylor that sticks with ferrules on the ends must be smaller than the hinge they fit into. It is scandalous to send out such stuff as he sends."[43] And to Katharine, he voiced his irritation over the difficult communication between Le Mans and Dayton during business negotiations with the French: "Does he (Orville) not intend to be partners any more? It is ridiculous to leave me without information of his doings and intentions."[44]

At such times one could glimpse how important to Wilbur was the whole notion of <u>knowing</u>, of divining the <u>order</u> in things, as a means of being secure and in control of life. The most stressful times in Wilbur's life were not those associated with

patent litigation, or separation from family, or hard work. It was the exasperation of not knowing where he and others stood, of not being able to proceed accordingly to plan, of having one's fate in the hands of others, that wore him down. He had become the opposite of the picture he portrayed to Lou, Reuchlin's wife, of the unassertive boy who is easily directed by others and has no especial aim or drive. After Orville's Ft. Meyer accident he wrote to Katharine:

> "I cannot help thinking over and over again, 'If I had been there, it would not have happened'. The worry over leaving Orville alone to undertake those trials was one of the chief things in almost breaking me down a few weeks ago and as soon as I heard reassuring news from America I was well again. A half dozen times I was on the point of telling Berg that I was going to America in spite of everything. It was not right to leave Orville to undertake such a task alone. I do not mean that Orville was incompetent to do the work itself, but I realized that he would be surrounded by thousands of people who with the most friendly intentions in the world would consume his time, exhaust his strength, and keep him from having proper rest. When a man is in this condition he tends to trust more to the carefulness of others instead of doing everything and examining everything himself. ...People think I am foolish because I do not like the men to do the least important work on the machine. They say I crawl under the machine and over the machine when the men could do the thing well enough. I do it partly because it gives me opportunity to glance around to see if anything in the neighborhood is out of order. Hired men pay no attention to anything but the particular thing they are told to do, and are blind to everything else."[45]

Wilbur's objections to publicity and notoriety may also have been rooted in a strong distaste for surrendering control. "If I can get through this season in such a way as to make a reasonable competence secure I am done with exhibitions and demonstrations forever," he wrote his father in 1908. "I can't stand it to have people continually watching me. It gets on my nerves."[46]

When Wilbur was angry his frustration often vented itself in sarcasm, of which he was a master. Griffith Brewer (an English friend) noted Wilbur's sarcasm directed at the French scientists and professors who visited Le Mans "to criticize the aeroplane which they did not understand", but for the most part he kept his sharper wit within the family circle. Irritated at the incompetence of the "hoss docteur" who treated his scalded arms at Le Mans, he fired

him after one visit ("I dressed the burns myself with more sense") and wrote three weeks later to Katharine, "I have been receiving letters from patent medicine people, faith healers, etc. and so much literature that I have half a notion to scald my other arm just for the luxury of seeing it get well almost instantly."[48]

When Wilbur unpacked the Flyer from the crate in which it had been sent to Le Havre by Orville the previous year, he found a tangled mess of parts and exploded a complaint the next day to his brother back in Dayton:

> "I opened the boxes yesterday and have been puzzled ever since to know how you could have wasted two whole days packing them. I am sure that with a scoop shovel I could have put things in within two or three minutes and made fully as good a job of it. I never saw such evidence of idiocy in my life. Did you tell Charley not to separate anything lest it should get lonesome? Ten or a dozen ribs were broken and as they are scattered here and there through the surfaces it takes almost as much time to tear down and rebuild as if we could have begun at the beginning. One surface was so bad that I took it completely down. Never again pack anything else in the surface box. The cloth is torn in almost numberless places and the aluminum has rubbed off of the skid sticks and dirtied the cloth very badly. The radiators are badly smashed; the seat is broken; the magneto has the oil cap broken off, the coils badly torn up, and I suspect the axle is bent a little; the tubes of the screw support are mashed and bent. The only thing I ever saw resembling the interiors of the boxes is the rattler at a foundry. Please bear in mind hereafter that everything must be packed in such a way that the box can be dropped from a height of five feet ten times, once on each side and the other times on the corners. ...To be brief, things must be packed at least ten times as well as they were the last time."[49]

Nine weeks later, when Orville's Flyer arrived in good condition at Ft. Meyer, having been crated in exactly the same manner, the tolerant Orville explained to his brother, "The goods came through in perfect shape. ...Our trouble (in France) is with the customhouse tearing everything loose and not fastening them again."[50]

In Wilbur's intellectualism there was a dedication to objective fact which had little patience either with error or with the psychological fact that people often invest a great deal of energy and pride in "errors" which they are then loathe to correct. In explaining his attitudes on this to George Spratt, who

had been a bit shocked at the zeal with which Orville and Wilbur pursued their arguments, he used a New Testament metaphor appropriate to the quality of righteous examination and cross-examination of an issue:

> "Honest argument is merely a process of mutually picking the beams and motes out of each other's eyes so both can see clearly. Men become wise just as they become rich, more by what they save than by what they receive. After I get hold of a truth I hate to lose it again, and I like to sift all the truth out before I give up an error."[51]

And later on, in 1910, when the long-simmering discord between Octave Chanute and the Wrights broke out openly, Wilbur stated his case with a vigor that Chanute found "violent". Wilbur, on the other hand, felt that he had merely cleared the air. "I have written with great frankness," he said, "because I feel that such frankness is really more healthful to friendship than the secretly nursed bitterness which has been allowed to grow for so long a time."[52]

Wilbur's brand of frankness was rough to take, and it sometimes alienated his friends. Only the family core understood the vulnerable origins and nature of Wilbur's aggressive pursuit of truth, and even at that they were more inclined to agree wholeheartedly than to speak somehow to the emotional underpinnings. This pursuit was the expression of a deep need for respect and dominance, a need which characterized the whole family in a way, so they were not inclined to dull the edge of Wilbur's sword. The object of Wilbur's strict intellectualism seems to have been a type of crusade for the "right", the "truth" of a secular variety, and in this he was very much in the tradition of modern science which has been accused at times of pursuing Fact as if it were Deity. Wilbur was viscerally convinced of the imperfectability of the flesh but he escaped any corresponding conviction that the mind might be inherently flawed in its capacity to attain the ideal of truth. Actually, he was the emotional and social child of his father's moral ~~fundamentalism~~ idealism, but also very much

the intellectual child of the Science and Machine age. His parents had done nothing to discourage free intellectual activity, and there was never in the Wright home any serious attempt to blend moral doctrine with empirical fact, ~~always a danger in fundamentalist thinking~~. In the family library was a variety of contemporary novels and magazines, and in Milton's personal library upstairs in #7 Hawthorn - to which the children had access - were books such as Plutarch's "Lives", Gibbon's "Decline and Fall", two sets of encyclopediae, a number of scientific works including Marey's "Animal Mechanism", which featured photographic studies of birds in flight, collections of essays and novels by Addison, Scott, and Hawthorne (the boys gave Katharine a bust of Sir Walter Scott for her 26th birthday), and several history books.[53] It was from these books that Wilbur derived his post high-school education, and it was in their company that his own dedication to the intellectual life was formed.

If it were true that moral doctrine did not dictate empirical facts in the Wright home, it was not true that the style of righteous zeal was kept equally at bay. Intellectual effort was, at least for Wilbur, much more than a means to achieve fame and fortune, and even more than a means to achieve a sense of control and mastery in life. It was something of a grand mission to create believers out of unbelievers. That, in part, explains his fascination with manned flight. Not only was it perceived widely as the last unsolved transportation challenge of the 19th century, it was also something which vast numbers of people simply did not "believe in". Wilbur's interpretation of the laws of nature were therefore at variance with popular thinking, and his goal became in some degree to convince them that they were wrong and that he was right. Something of this spirit touched many early aeronautical investigators, but Wilbur seems to have picked up on it with just the right combination of

ministerial and scientific traits. "For some years I have been afflicted with the belief that flight is possible to man" he wrote in his first letter to Chanute in May, 1900. "My disease has increased in severity and I feel that it will soon cost me an increased amount of money if not my life."[54] And two weeks later he complimented Chanute on some articles the latter had written for popular magazines: "It is important that more persons should be intelligently interested in this subject. Lilienthal's enthusiastic efforts to arouse others may yet prove his most valuable contribution to the solution of the problem. what one man can do himself directly is but little. If however he can stir up ten others to take up the task he has accomplished much. I know of no man in America so well fitted as yourself to do this missionary work."[55]

For others the idea of "missionary work" and "belief" might have been acceptable metaphors or analogies of the reality of scientific diligence. But for Wilbur it was no analogy. The speed with which he and Orville accomplished their "mission" surprised even them, and stands as testimony to the power of crusading zeal in pursuit of a practical objective. And perhaps a sense of personal mission in life has a longer incubation period than mere career choice, explaining the years Wilbur spent in apparent distraction and rumination during his "lost decade".

Lastly, one has to stand back a bit from this whole discussion and absorb the phenomenon that a preacher's son with a high-school education, albeit a good one, from a plain Ohio town even pondered the possibility that he might contribute to the mastery of flight. The sheer scope of the intellectual task which had defeated so many others with such fatal regularity should have been enough to keep Wilbur humbly at work in the bicycle shop, or perhaps teaching, or writing occasional articles for local newspapers. Wilbur's success only makes sense when we appreciate his unique blend of intellectual power, single-minded

pragmatism, ruthless adherence to empirical observation, and a driving missionary ambition to rid human thought of at least one glaring error - that flight was not possible to man. These were the ingredients in his personal crucible of flight.

MASTERY OF OTHERS

It is the fate of all crusaders to do battle at some point, and in many instances to create battles where other forms of arbitration would just as well suffice. Social dominance or power was never sought by Wilbur - to all the world he was soft-spoken, shy, retiring, and modest to the point of seclusion. In defense of his beliefs, however, he was powerful and combative. The "us-against-the-world" atmosphere of the Wright home during the long years of Milton's struggles with the church had created a kind of working assumption, especially in Wilbur's mind as he became his father's virtual field lieutenant, that the world can be divided in two camps - those in the right and those in the wrong, those who believed and those who had yet to be convinced of the error of their ways. Thus a primary correlate for interpersonal relations was that one had always to be prepared for argument.

In Wilbur's case, the very character traits which drove him to alliance with his father and to successful pursuit of a quiet, ascetic goal created in the long run conditions in which it became necessary to defend that goal against a hostile majority. Somehow to escape this destiny, to find some peaceful manner of getting his life together, was a major concern in his years of indecision. His fear - that confrontation would injure and invalidate him - led to a delay in his industry with the major benefit being the time it afforded for the maturity and consolidation of his emotional resources. As we have seen, one of the apparent major accomplishments of the consolidation process was an acceptance of his own ~~aggressive~~ competitive drives and their risks.

Wilbur went through a "weeding out" of career options, ruling out one after the other, until the notion of flying took definite form somewhere between 1896 and 1899. Business was one activity for which he expressed a positive distaste. "Business", he had written to Reuchlin's wife in 1901, "is merely a form of warfare in which each combatant strives to get the business away from his competitors and at the same time keep them from getting what he already has. No man has ever been successful in business who was not aggressive, self-assertive, and even a little bit selfish perhaps.... we (the Wrights) ought not to have been business men."[56]

Wilbur regarded a college education, as it was understood in those days, as "wasted" on a business man, yet he never went to college in spite of the fact that his father had offered to help with the expense. He simply lacked ambition for any conventional professional or commercial pursuit, in part because he continued to squelch his competitive, combative intellectual heritage, and in part because powerful family loyalties subtly prohibited any life decision which might lead to a career away from Dayton for any of the children after Susan's death. Wilbur felt that any tuition money might be ill-spent on him if he were not more ambitious for a specific profession, though he threw in for good measure the rationale of his "poor health". If not always ambitious, he was always honest in his self-appraisals.

An irritation at business and its affairs marked both Wilbur and Orville as long as each of them lived. It was their ambition to make a quick fortune with the airplane by selling it to a government, and then retire on the royalties to a life of scientific experiment and quiet intellectual discovery. Orville eventually realized this goal after a fashion, but Wilbur died a few years short of it in the process of defending their patents and their profits from competition. In a 1907 conversation with Hart O. Berg, Flint & Co.'s representative in Paris, Wilbur spoke for himself and Orville:

> "My idea is this. I don't want to build up a big business. I want to get some money out of it. I want the business built up so as to get the greatest amount of money with as little work. Sell few machines at a big profit, so that we can close out - if we could get the business into such shape as to get government sales on royalties ... Our motto is not "lots of machines", but "most money"."[57]

By 1911, righteous indignation had displaced the drive for self-sufficiency and was the major motivation for Wilbur's staying in the business end of the work. He wrote to Orville from Berlin,

> "If I could get free from business with the money we already have in hand I would rather do it than continue in business at a considerable profit. Only two things lead me to put up with responsibilities and annoyances for the moment. First, the obligations to the people who put money into our business, and second, the reluctance a man naturally feels to allow a lot of scoundrels and thieves to steal his patents, subject him to all kinds of trouble or even try to cheat him out of the patents entirely... I hate to see the French infringers wreck our business and abuse us and then go unscathed. For the good of the public and the protection of others we ought to do our share to discourage such people a little."[58]

Though it is clear that business warfare did not appeal to the Wrights, it would be hasty to conclude that Wilbur did not enjoy a good fight. Business warfare did not appeal, to be sure, because it was basically amoral - competition for markets and the sale of merchandise was not generally a matter of "right" versus "wrong", but rather a much more prosaic affair based on the merits of the product and not on high principle. One man's bicycle, or newspaper, or flying machine might be better than another's, but that seemed little cause for rousing righteous juices. However, where some moral issue was perceived with the Wrights suffering persecution at the hands of the wicked, Wilbur would join the fray with relish and energy. This was just as true of patent litigation as it had been in the U.B.C. because the issue was seen as fundamentally the same - a morally wrong majority against the morally correct Wrights.

In a letter to Katharine from Berlin in 1911, where he had gone to straighten out some financial problems concerning their royalties from the German syndicate underwriting manufacture of Wright planes in that country, Wilbur's zest for battle was apparent:

> "...I have now laid aside all business cares, and have gone in for fun. Most of my time is spent in getting up a letter which I am going to send to the stockholders as soon as I can get it translated and printed. I have not had so much fun since I wrote those Keiter papers... If the first dose does not effect a cure, I am intending to carry the fight into the courts and into the newspapers and if possible bring it to the attention of the Emperor as a national scandal... Like McNarry after the fire, the troubles are over, and I can now go ahead and scrap it out in peace."[59]

The identified villain here was a W. Rathenau, president of the German General Electric Company, major contributor to the Emperor's "airship society" in previous years, and member of the Board of Directors of the Wright Company in Germany. His alleged wrong involved some redirection of Wright royalties into his own company. "Our friend Dr. Rathenau," Wilbur wrote Orville, "is a good substitute for Keiter, but I think he has wandered into his own net and that when he discovers where he is, and whom he has to deal with he will have a sad awakening." The Christian Daytonian could not avoid a nastier turn of sentiment when he considered Rathenau's ethnicity: "I feel certain that, like all Jews, he lacks courage for an open fight, however much he may bluster with these poor idiots here who are afraid of him."[60] Two months later Wilbur wrote his letter to the stockholders of the German Wright Company, "explaining what Rathenau is doing" he told Orville, "and calling them to kick him and his "dummies" out of the board... I expect the temperature of Berlin will rise a few degrees when the doctor reads the letter."[61]

Wilbur had arrived in Europe spoiling for a fight ("Our people have not the nerve to negotiate in the way I could negotiate..."[62] and when he returned to America it was to join another ongoing battle with Glenn Curtiss over his violation of Wright patents. This litigious scrappiness dominated Wilbur's last months - he died May 30, 1912 in his home in Dayton - and is a remarkable kind of recreation of the career pattern of his father. Had Wilbur lived it would have been a major task for him to lay down the sword of self-defensiveness and take up once again the quieter search for scientific truth. In fact, one could argue that righteous

litigation was every bit as congruent with Wilbur's nature as solitary study, once he had grown comfortable with his own aggressive passions. He performed exceedingly well in court - his niece Ivonette remembered the lawyers saying that "They had never heard anybody that could give a clearer picture of what he wanted to point out"[63] - and his father remarked that "The amount of his intellectuality ... was marvelous."[64]

Whether he thrived on such argumentativeness, or whether it led to his failing health and vulnerability to typhus infection, or both, is hard to say. Certainly the family believed that his legal battles had weakened him, but that theory was fed by contemporary mythologies about the mind-body relation, and by a likely tendency to transform Wilbur's death into a sort of martyrdom. Bishop Wright's diary entry on the day of Wilbur's death was a succinct character appraisal of his most loyal son:

> "This morning at 3:15, Wilbur passed away, aged 45 years, 1 month and 14 days. A short life, full of consequences. An unfailing intellect, imperturbable temper, great self-reliance and as great modesty, seeing the right clearly, pursuing it steadily, he lived and died."[65]

Four days later the family was still absorbing the shock. "Wilbur is dead and buried!", Bishop Wright exclaimed in his diary. "We are all stricken. It does not seem possible that he is gone. Probably Orville and Katharine felt his loss most. They say little."[66] Orville distractedly thumbed through letters of sympathy, unable to give them much in the way of attention or answer. Four days after the death, with Wilbur interred next to his mother in Woodlawn Cemetery, Orville and his father climbed into a car and drove numbly for twenty miles through the Dayton countryside.

When Wilbur died, the entire quality of life in the Wright household changed. Gone was that awakened sense of mission, an atmosphere that had colored the mere marketing of an invention with the bright hues of moral purpose. Gone also was a certain aggressiveness, a push for mastery and competence which had evolved with

such slow but tidal force in Wilbur's young adulthood, sweeping along with it the fortunes of the whole family and, in some ways, the fortunes of us all. From the date of his death the Wright home would be marked as much by his absence as by the presence of those who remained.

# ORVILLE WRIGHT

I will risk stating a conclusion at the beginning of this chapter rather than where it belongs, because it is to me an obvious one about Orville Wright and one which serves well as a backdrop against which much of his character becomes clear: Orville Wright was ~~spiritually~~ psychologically a boy for every one of his 76 years. He worked like a boy, played like a boy, and related a biography (to Fred Kelly) late in his life which is astonishingly boyish in its content and perspective. Having said that, we can look more closely at the processes which molded Orville towards his destiny as the first human being ever to fly.

Orville was born in Dayton on August 19, 1871, in the newly constructed Wright home at 7 Hawthorne Street. Like Wilbur, he was named after one of his father's admired churchmen, Orville Dewey, a Unitarian minister.

If Milton had any desire for one of his two youngest boys to enter the ministry, it was clear from early on that Orville might not be the better choice. Headstrong and even a bit rambunctious in his enthusiasm for things, Orville lived the life of an adventurous, extroverted imp. At the conclusion of his sixth grade in Richmond, Indiana, when the family was preparing to move back to Dayton and re-occupy the house they had left so soon after its completion, Orville was dismissed from class for some mischief. He then simply stayed out of school for the two weeks remaining in the school year, not informing his parents of the dismissal. The next Fall, however, he ran into trouble getting admitted to the 7th grade in Dayton because he had received no certificate from the 6th grade in Richmond. We do not know how he finally explained all this to his parents, but he put up such a protest against being held back in the 6th grade that he was allowed provisional admission to the next grade. Kelly reports that at the end of that year Orville had received the highest mark for mathematics in the whole city. His reputation for liveliness offset praises for his intellect,

though, and in following years he was often assigned to a front row seat so that teachers could keep an eye on him.

If Orville's "authorized biography" as written by Fred Kelly is to be believed, Orville suffered numerous injustices at the hands of short-sighted and authoritarian teachers and eventually decided he could learn as much outside of school as in it. One unfortunate geometry teacher, a Miss Wilson, was remembered as having neglected to compliment Orville on his novel solutions to geometry problems, choosing instead to scold him for not following the method prescribed in the text and for using the word "stuff" to describe a "beautiful science" such as mathematics.[1]

Life has its share of Miss Wilsons and perhaps too many of them find their way to the head of some classroom. Such, apparently, was the attitude in the Wright home, for Orville was not punished for his school problems and felt that his woes would be greeted by sympathetic support on the home front. His intellectual and behavioral independence was therefore encouraged as was, perhaps inadvertently, an opinion that formal schooling was overly stuffy and even unnecessary. Many years later (when he was advocating the pursuit of schooling) Orville remarked on the tolerant atmosphere in his boyhood home: "...We were lucky to grow up in a home environment where there was always much encouragement to children to pursue intellectual interests; to investigate whatever aroused curiousity. In a different kind of environment our curiousity might have been nipped long before it could have borne fruit."[2]

Like Wilbur before him, Orville was educated at home in early childhod and was not sent out to school until about the age of 8. Though he performed very well at school and received plenty of encouragement at home, he left high school one year short of graduation and took a special Latin course for an hour or two every day in case he should decide later on to apply to college. (Apparently the

last year of high school was largely devoted to review, as Orville saw it, and he didn't have the patience to endure it.) Orville never did apply to college, but immersed himself in activities of more immediate satisfaction to him - printing and publishing, and later bicycle sales and repair.

In trying to understand the course of Orville's life we have to reconcile a number of contradictions. The first is that as a boy he was assertive, self-willed, strong-minded, and of independent thought. He was an acknowledged leader in his age group. Yet as a young man he was widely seen as a mild, unobtrusive, self-effacing and accomodating "nice guy" who generally took the back seat to others in any social situation. Still again, as a much older man he seems to have reverted to a certain stubborn orneriness and strength of opinion.

A second contradiction is that in spite of an adolescent interest in his appearance and a desire to socialize with the opposite sex, he would up a confirmed bachelor who, like Wilbur, was very uncomfortable in the presence of young, unmarried women.

Lastly, his broad range of activities and interests as a boy evolves not into a pattern of wide creativity or research as an adult but into a rather limited kind of inventive tinkering with things and a preoccupation with the accuracy of minor details. This latter quality was largely responsible for the fact that he never wrote, as he said he would, a full technical account of the invention of the airplane. He became in later life, and noticeable after 1915, a man whose work was circumscribed by odds and ends of various minor projects. Elaboration and exploration of these contradictions will be the challenge of this chapter.

## LEADER TO ACCOMODATOR

In 1909 Bishop Wright reminisced about his youngest son:

> "When about seven years old, living in Cedar Rapids, Orville got up an army of boys, fifteen or twenty, and was chosen general. (Kelly describes how this army, under direction of General Orville, threw pebbles at the school windows one afternoon and escaped the hot pursuit of the janitor.) His enthusiasm always made him a leader among boys, and happily his leadership was never toward vice. He loved to tell his mother of his army and its progress; and as he did so, placing his hands on the seat of a chair, he would punctuate his narrative by heels flying into the air...(This is) the natural language of exhileration."[3]

Orville's leadership qualities and enthusiasm had a strongly entrepreneurial flavor as well. In Richmond he made and sold kites (Wilbur, then 14, did not participate in this "juvenile" activity, but did advise Orville on the kites' construction), folded papers for a U.B.C. publication, and hauled scrap metal in his wagon. Also, he capitalized on an odd habit among young boys of chewing small pieces of tar by experimenting with sugar-coated tar wrapped in paper. He and a friend made themselves sick testing the stuff, though, and the product never reached market. Wilbur was always a close observer of Orville's activities even when he did not participate directly, and he never allowed Orville to forget what he called "that chawin' gum corporation."[4] Another enterprise was a sort of backyard circus, using the stuffed animals in the collection of a friend's father. The animals were mounted on a wagon to be hauled through the streets. Wilbur's assistance here in drawing up a "press release" announcing the event in proper circus-bill hyperbole was instrumental in getting out a sizeable crowd. Such was life in Richmond, Indiana in the 1880's.

As recalled by an Orville roughly in his late sixties, these stories paint an almost Norman Rockwellian picture of an American boyhood. We miss hearing only about the flop-eared mutt and the lemonade stand. But discounting the rosy color on Orville's glasses as he reviews his boyhood, we are still left with evidence of his initiative and energy. He was temperamentally an active and curious child, and as the youngest boy of an increasingly ill mother he may not have had as thorough a disciplining as his older brothers. Katharine too was noted for her

strength of will and her recalcitrance in the face of strictures which rubbed her the wrong way. Though one can infer from habits of adult life (one of which was an irrational fussiness about how his food was prepared) that Orville's mother may have doted on him a bit, there is really such a poverty of evidence and information on the relations in his early life that even speculation would be unwarranted. One would only note that boyhood was recalled by Orville to be an idyllic time of activity and happiness, a time of endless possibilities - so much so that he was forever loathe to give it up. Rather than completing the formal education he had pursued up to within one year of high school he remained within the safety of his boyhood enthusiasms and proceeded to turn them into full-time business ventures.

The question of how psychological attributes might be inferred from the quality of one's enterprises is a difficult one. I think, though, that we can look at the scope of Orville's inventions - their range of imagination and the depth of thought behind them - and we can see where inventiveness ends and a larger creativity begins, where novel mechanical gadgetry becomes a more theoretically based break-through, and it is at this point that Orville's talents define him. With the exception of the collaborative work on the airplane, Orville's numerous inventions were the product of a very bright mind, but one whose driving spirit was that of the better mousetrap and not a vision of scientific advance.

For some reason Orville never made that qualitative leap from invention to creation. Probably one reason was his decidedly anti-intellectual bent, which was reinforced in several unfortunate encounters with teachers and which, we might assume, his family felt would be overshadowed by the larger spirit of learning in the home. Orville's interests were, appropriately enough for a boy aged 8-12, rather narrowly mechanical. But he needed a greater discipline than he received to expand his interests beyond mechanics to the humanities and to

theory-based scientific inquiry. Also, Orville was a boy whose needs, whether of food or curiosity, required an immediate sort of gratification. He was impatient when answers were not forthcoming, or solutions not rapidly found, and he delighted in applying his abilities towards immediate and concrete ends. He had little time or interest for the stickier problems of human relations, politics, or history even though he enjoyed debating such issues in his later years. The very process of education itself was not fast enough for him. Rather than mastering the whole of it he dismissed those parts of it which did not interest him, foreclosed on a broader educational perspective, and constructed for himself a world of industry, activity, and tangible results. (He regretted not having gone to college, but only much later in his life when he was being held up as an example to all the youth of America.) One of his earliest fascinations was woodcutting. Perhaps it was the immediate results one could obtain from pressing the block upon paper and seeing one's production in black and white that appealed to him. After a hard summer's apprenticeship and a year's employment with a printer in Dayton, Orville made printing his career at the age of seventeen.

Another factor must be considered in exploring Orville's lifelong investment in his boyhood, and that is his mother's chronic illness during his teen years and her death just prior to his 18th birthday. I must say right now that there is no evidence to help us determine Orville's reaction to his mother's passing. Perhaps this omission from what records there are, including his own biography which simply notes that she died after a long sickness and that Wilbur cared for her during those years, says something in itself. If Orville's reaction to Wilbur's death in 1912 is any guide, we can infer that he did not talk about his feelings with anyone and reacted to his loss with a protective refusal to communicate his inner life. He lost himself - and found himself - in the daily structure of a routinized industriousness.

Of all the Wrights, Orville was perhaps the least "psychologically-minded", the most prone towards locking up his feelings and towards a perception of the world as nosy or prying. His grief probably had within it a certain quality of having been betrayed by life, of being treated unfairly by the (adult) world, which so illogically and arbitrarily deals out pain and separation. If anything characterizes Orville after Wilbur's death it is a sense of grieved injury, prompting retreat behind a shell of work - almost make-work - and creating a permanent sense of anger that life should be so arranged as to cause unhappiness and hurt. Orville was neither temperamentally nor emotionally equipped to survive with grace and wisdom such meaningless phenomena as the deaths of family members. Where Wilbur fought such illogic with the psychological discipline of his intellect, Orville shunned it for the reliable pleasures of juvenile invention.

So perhaps mother's death may have been the beginning of a more serious anxiety in Orville about the emotional tasks of adult life, an anxiety which up to that point had been absent from his character or simply acted out in minor forms against a variety of "Miss Wilsons". We really don't know much at that level of psychological inference, given the available evidence. At any rate, Wilbur's death was still many years away, and Orville's industry was not noticeably diminished or altered after Susan died.

With Wilbur's help, he constructed a printing press in 1888 and issued the first copy of his small "West Side News" on March 1, 1889. A boyhood friend, Ed Sines, was his major collaborator at that point, though Wilbur was a frequent contributor. Wilbur joined the paper officially as editor (Orville was "publisher") around the time Susan died. About a year later the weekly "West Side News" was converted to a daily called "The Evening Item", which soon failed in competition with the expanding and much larger daily newspapers in Dayton. The Wrights then put out a weekly human interest and editorial publication called "Snap Shots" which was their main business until 1892, when they became involved, under

Orville's leadership, in the bicycle business. "Snap Shots" (the name derived from the brothers' interest in photography) continued until 1894, and Ed Sines managed the printing shop until 1898 when a leg injury forced sale of the business. (Sines would up as an insurance agent in Dayton until his death in 1940).

Orville turned his energy toward bicycles and the Wrights were soon manufacturing their own models for sale. They experimented with pneumatic tires and other design changes, but Orville's inventiveness was not confined to bikes. In 1895 he constructed a calculator which could multiply as well as add, and developed a typewriter that worked more simply than others on the market. Late in 1895 Milton wrote to Reuchlin that

> "The boys are building a gas engine with improvements by both - principally by Orville - who is quite an inventor. They are sold at several times their cost, and are coming into use very rapidly."[5]

The one element of Orville's boyhood which had dropped out of his young adult life by that time was his leadership of others. There was no room in the young adult peer group for a "chief prankster", and Milton was probably correct in noting that it was largely Orville's unbounded enthusiasm which earned him a general's rank in his school years. At this point in his life - roughly in his twenties - the enthusiasm which once marked him as a leader of boys comes across more as good humor, vivacity, or heartiness of a good fellow and compatriot, than as the dynamism or tension of true leadership.

The transformation of Orville from assertive enthusiast to self-effacing and affable fellow included a fine sense of others' feelings and opinions - a trait that made him many friends. In his letters to George Spratt we see a tone of gentle support, as opposed to Wilbur's more paternalistic "guidance". Sensitive to Spratt's tendency to compare himself to the Wrights, Orville used self-deprecating humor to avoid any portrayal of himself and Wilbur as superior or more accomplished. Wilbur, on the other hand, was much more inclined to speak his mind and let the

emotional chips fall where they may. In speaking of their propeller design, Orville wrote Spratt,

> "We soon discovered, as we usually do, that all the propellers built heretofore are all wrong, and then built a pair of propellers 8 1/8 ft. in diameter, based on our theory, which are all right! ('til we have a chance to test them down at Kitty Hawk and find out differently). Isn't it astonishing that all these secrets have been preserved for so many years just so that we could discover them!! Well, our propellers are so different from any that have been used before that they will have to be either a good deal better, or a good deal worse ... We have also made some experiments on the best shapes for the uprights of our machine, and again found out that everybody but ourselves are very badly mistaken!!!"

Concluding his lengthy letter, Orville combined an awareness of Spratt's defeatism with a final piece of self-effacement to give a good example of his humble posture toward friends and his self-deprecating humor:

> "In the hope that this long tedious letter will make you just tired enough for a good whole night's sleep, I will take my pen, correct a few of the errors that this typewriter has been mean enough to make, and inscribe myself..."[6]

This humility went further, actually, and sometimes became a feeling of inadequacy or failure in things of a non-mechanical or non-technical nature. Where Wilbur shone - in verbal and written expression - Orville seemed to feel weak, in spite of his very good writing abilities. Indeed, one would have a tidy sum ~~be very~~ wealthy if $10 could be collected for every speaking invitation, or request for written accounts of the Wrights' work, that Orville turned down after 1912. He had an aversion bordering on phobia toward any public appearance or self-revelation, and requests along these lines were incessant all his life. In 1937 he refused an invitation to address the Georgia School of Technology in Atlanta:

> "I regret that my inability as a public speaker is not merely a lack in oratory. Stage fright comes nearest describing it. I have declined every invitation to speak in public either from the platform or over the radio, for the past twenty years."[7]

Exactly eight years prior to this, Orville had offered reference to some prior trauma, and acknowledged the extreme vulnerability he felt when facing an audience. He did so in declining an invitation to speak at graduation

ceremonies of the New York Military Academy:

> "Of all the things I would like to be able to do, there is hardly anything I would like to do more than make "speeches". But years ago I tried it. Not only were my efforts dreadfully painful to me, but almost equally painful to those who had to hear and see me. I had to give up speaking, and I don't even attempt it any more.
>
> But if I would speak, I certainly would take pleasure in doing it for you at your school. But I simply can't, and I'm awfully sorry."[8]

As early as 1916 Orville insisted that "as a speaker I am a complete failure"[9] but I have not been able to unearth the incident which so traumatized Orville that he never again made a speech. He recalled in his own biography (Kelly) being called on as a schoolboy to recite in front of the class, and that he was so frightened that he held the book upside-down. Through transposing the inverted type in his head, and the power of his memory, he was able to avoid the shame of having to right the book in front of his classmates. But this would be less of a"trauma" than a plain indication of self-consciousness and shyness.

There are other examples of Orville's shyness as a boy, his reluctance to "speak up" for himself.

> "Between spasms of creation (in Richmond, Indiana), Orville tried to become a "Chromo" Salesman. The job was to ring doorbells and convince people that they needed an ornately colored picture of flowers, fruits, and other objects. Although he started at a far end of town where nobody would know him, the young canvasser suffered anguish over the mere task of pulling a doorbell. He patrolled the street for long minutes before he gained courage to ring. Two chromos were sold ... then he resigned the agency."[9]

At age 9, Orville earned some spending money by hauling scrap iron in a small wagon. He once approached the office of a chain factory to ask the manager for scrap, but could not summon the courage to make his request. He sent 6 year-old Katharine in while he waited outside.[10] Even the famous "circus" in Richmond was not intended for adult eyes, and it remained an unfailing source of laughter in the Wright home over the years that when Orville and his friends saw the actual crowd which had showed up, they immediately changed the circus parade route and drove it up a side street to avoid being seen!

Public appearances were the cause of endless discomfort for Orville, and on the day of his death - January 31, 1948 - the Dayton Daily News printed the following story under the caption, "Most Embarrassing Moment":

> "It's doubtful that Orville Wright ever forgave Jesse Jones - one-time member of FDR's cabinet - for his part played in connection with ceremonies commemorating the 40th anniversary dinner in Washington, D.C., where he was to present the Collier Trophy ... to Gen. Hap Arnold, then chief of the AAF (Army Air Forces).
>
> Jones was in charge of arrangements for the affair and asked Orville to say a few words in presenting the trophy to Gen. Arnold. Since he was noted for not making any type of public utterances, Mr. Wright refused. Jones concurred in this and Orville went to Washington thinking everything was all right. However, just prior to the meeting, a freind of Mr. Wright's called him aside and told him that Jones was expecting him to make a short talk which was to be broadcast. Orville at once got in touch with Jones and told him that if he persisted in expecting him to speak he wouldn't even attend the dinner. Jones again agreed and Orville went into the meeting thinking it was all settled.
>
> Then as the time came for the trophy presentation, the toastmaster turned to Orville and asked him to say a few words in making the award. Those who listened to the broadcast that night will remember the hush that fell over the meeting - the absolute silence. Finally the announced broke in with the words that Mr. Wright had handed the trophy to Gen. Arnold, shook his hand, and had sat down."[11]

The episode made a sour impression on the Wrights, for they suspected that the whole affair had been arranged by "politicians in Washington (who) were trying to give the credit to Franklin D. Roosevelt for placing the (1903) plane in (the) Smithsonian."[12] Orville had accepted the invitation only on the urging of Lester Gardner, chairman of the Institute of the Aeronautical Sciences, and to Gardner he wrote two years later in 1945, "Practically nothing done in Washington is what it pretends to be - there always being some ulterior motive, generally of a political nature."[13]

In addition to his determined position against public speaking, Orville's reluctance to write articles or letters was legendary, and in later years he was frank in saying that he found writing to be an onerous task and therefore did not do much of it. One acquaintance, a Washington D.C. artist, dubbed him

teasingly "Mr. Awful Write", though she added that in her opinion he wrote "most beautifully easily."[14]

As can be imagined, with Wilbur's death and with the increasing public awareness of the magnitude of the Wrights' achievement, great pressure was applied to Orville from many sources - publishers, journalists, biographers, friends, even his sister Katharine - to "get down to it" and write a first-hand account of the invention of the ariplane. But the temptation to immerse himself in the mechanical gadgetry of his laboratory proved too great. Fred Kelly drafted a first version of an article on "Traits of the Wright Brothers" which followed the publication of the authorized biography in 1942. Orville had the following paragraph scratched out of the final copy:

> "Back of the office part of the building, a few steps down, is the laboratory, a fully-equipped machine shop, forty by sixty feet. Here Orville Wright devotes himself, from time to time, to whatever scientific project happens to claim his interest. Working with hands or tools is still his breath of life. Occasionally, when he was going over my manuscript of the biography, "The Wright Brothers", graciously helping me to make corrections and verifications, he would get up to stretch and then disappear. But he could be found in the shop, maybe operating a drill, or filing at something in a vise. After a few minutes of that kind of "play period", he would return, much refreshed."[15]

Orville himself recognized his laboratory as a source of procrastination in writing, and in the mid-1920's when he seemed most nearly on the verge of committing himself to the task, he resolved to stay out of the lab until the writing was accomplished:

> "I have temporarily suspended work in my laboratory so as to give my time to the collection and preparation for publication of the work done by my brother Wilbur and myself which resulted in this first flight. This should have been done long ago, but writing for me is not an easy task."[16]

Orville dismantled his large wind tunnel in the weeks thereafter, and never put it back together again. But a year and a half later he still had been unable to touch pen to paper, and vowed to begin when he returned from his usual 8-10 week summer vacation on the Georgian Bay in Canada. Dismantling his lab had

become a job which stretched out over a year.

> "I really think I will get down to writing when I get back from camp this fall. I am now dismantling my laboratory, so that I will have no place to play. When I can't play I will have to get down to work to keep busy."[17]

By the late 1920's, it was apparent that Orville would never write his own book and pressure grew for him to enter into collaboration with a professional writer. Any number of offers were made. Some were half-accepted and then abandoned, and most were just rejected. The whole process dragged on interminably until a genial, self-effacing, Ohio native with the Booth Tarkington stamp of approval wriggled into Orville's trust just a decade before his death, and extracted with pain and ardor a story Orville could accept as fit for public consumption. Regardless of the quality of the work as biography, Fred Kelly's book stands with the Wright Flyer as a monument to patience and determination in adversity.

Orville's final opinion on what he wryly called "literary" work was delivered in 1939 to John N. Wheeler of the North American Newspaper Alliance:

> "...I am always busy, but on matters I enjoy more than writing. I simply hate writing. However, I always hope to develop enough will power to do the writing anyway."[18]

In truth his letters - particularly his family letters in the years 1900-1908 - are very well written. He could express himself with wit and humor, and his style of writing is not particularly awkward or tortuous. If it was a difficult task for him, the difficulty lay somewhere other than in what he regarded as his "lack of ability".

Three hypotheses come to mind regarding Orville's distaste for writing. One is that he refused to compete with Wilbur in that sphere and was at first reluctant, then later adamant in his reluctance, to produce in a modality at which his older brother so clearly excelled. Some such motivation as unconscious resentment of his deference to Wilbur, or some feeling of comparative failure (like Spratt),

or a hesitation to fill the shoes whose emptiness he would never allow himself to ignore, might have been at work. It is really very hard to sort this out from such a distance.

A second hypothesis is certainly on more solid evidentiary ground. That is, Orville was an almost obsessive stickler for detail and therefore could never feel comfortable in any literary effort unless every last aspect of an event were drawn out in full. This kind of perfectionism made for excellent engineering and mechanics because its borders were set by the very concreteness of the task. But in writing it established a standard for thoroughness way beyond the requirements of the task and therefore made it onerous, even impossible, to begin, much less complete. To put it another way, Orville's perfectionism sometimes made it impossible for him to separate the important from the less important, and he enmired himself in the sheer hopelessness of rendering such judgements in a written record. It was a rather classic example of the psychology of procrastination.

Another hypothesis is more intriguing, however. This would be that Orville's overall communication with the adult world outside his family was made stiff and embarrassed by his sense of having been betrayed, of having been somehow let down by life, of feeling deeply that the world did not deserve communication from him. Though shyness and a sense of inadequacy were dominant in his avoidance of publicity, his hostility towards media which make the private life public was intense also. He explained to Fred Kelly in 1946 why he had refused to cooperate in any film story of the Wright brothers:

> "...The fact that moving pictures are the biggest liars in the world is the reason that I have steadfastly refused to have anything to do with them."[19]

Perhaps
At the foundation of this attitude, and coexisting with his sense of technical competence, was some feeling of emotional smallness - that perhaps it was he and not the world which was so disappointing. But as he grew older, and especially after Wilbur's death, Orville became less self-deprecating, less concerned with accomodation and with pleasing others. He became correspondingly more convinced that it was indeed the manipulative and hurtful "world" outside the home and hearth, rather than his own inadequacies, that was responsible for life's pains and misfortunes. Therefore the affable, receptive, congenial young man grew into a semi-reclusive, rather suspicious, close-mouthed figure who would not allow reporters to take notes in his presence, who rarely granted interviews in the first place, and whose "official" biography, long delayed and nearly squelched, is as much a work of defensiveness as of revelation and insight.

As a father figure of aviation in the 1930's and 40's he was obliged to meet the press occasionally and would deal with these situations by recounting boyhood stories or early anecdotes about flying. "Reporters who talked to Orville had to have the faculty of remembering his words by mental process, since the sight of notebook or copy paper produced silence, or at best a change of topic to trivial material."[20]

His refusal to speak became in later life less of an expression of personal self-doubt or shyness and more an act of defiance - a militant refusal to allow the outside world any access to the insulated core of the Wright experience. Orville was deeply aggrieved by the actions of Smithsonian officials, for instance, to discredit the Wrights' achievements, and the donation of the Wright Papers to the Library of Congress was delayed (and very nearly did not happen at all) until just after Orville's death in 1948 because Alfred Zahm, their friend-turned-opponent in the Curtiss trials, was made director of the Library's aeronautical collection. In Marvin McFarland's introduction to the published volumes of these Papers, Dr.

Zahm's role is touched upon:

> "...though he had once been on the friendliest terms with both the Wrights, (he) had become the paid expert witness against them in their patent suits with Glenn H. Curtiss; (he) - so Orville believed - had engineered for Curtiss and for the Smithsonian Institution the controversial Hammondsport trials of the rebuilt Langley aerodrome in 1914 and 1915; and (he) for years never lost an opportunity to deny the Wrights' title to the invention of the aeroplane or to belittle their contributions to aeronautical science."[21]

Zahm was professor at Catholic University of America in Washington, D.C. from 1895 to 1908, and published a textbook on aeronautics in 1911. It is a slanted work, exaggerating the potential of most early "aeronauts" while making small of the Wrights' work. Having left Catholic University around the time that the Wrights were beginning to push for a monopoly on the invention of the airplane, Zahm attempted to align himself as a professional witness in the Curtiss-Wright suit. Afraid that the Wrights might not employ him on a permanent basis if they won the suit, even if he had been a witness for them, he attempted to strike a deal. They refused, so he became an "expert witness" for Curtiss, with whom he then collaborated on the development of Curtiss's planes. Zahm therefore acquired a financial interest in the outcome of the suits and played a role in assisting Curtiss with the Langley aerodrome at Hammondsport. He retained an enmity for the Wrights not only because they had "shut him out" of a future with their projected monopoly, but because Wilbur had seriously embarrassed him in court in 1910 by pointing out obvious contradictions in his sworn affidavits. In one affadavit he submitted for the Wrights (prior to their refusal to take him on in a larger role) he had sworn that Curtiss had claimed incorrectly, that the angle of incidence in flight is always constant. In a later affadavit for Curtiss, Zahm swore the opposite. Zahm's final position on the issue of who discovered the secret of flight was an awkward effort to salvage his professional pride by bypassing all apparent candidates.

> "Long after the Wright lawsuits and the Wright-Smithsonian controversy were past, he continued trying to prove that 'the aeroplane is a world invention' and, making himself, as it were, the professional apologist of aeronautical failures, at various times declared that the real inventors were neither the Wrights nor Langley, but Boulton, or Johnson, or Ader, or Mattullath, or Henson, or Goupil, or Whitehead, he was never quite sure which."[22]

In his later years, the once stubborn Orville who had protested loudly about being kept back in the 6th grade was, with equal stubbornness refusing responsibilities to serve as president of the Oakwood Library Board, saying at each annual election, "I am a very poor leader and would make a bad president."[23] Yet for twelve years (1934-1946) he served as member and vice-president of this board.

But if Orville managed more of a stubborn than a passive humility in his golden years, there was still indication that at bottom he shunned responsibility and leadership to a degree that almost discounted his own capacity. One incident with Wilbur was revealing, as was another years later in 1936:

> "When the two brothers returned to New York from Europe in 1909, Wilbur made a speech at a Lawyers' Club in New York and when he had finished, Orville was introduced and called on for a few words. He replied in effect that he agreed with everything that Wilbur had said, and sat down. Another occasion was when the National Advisory Committee for Aeronautics held a meeting in Orville Wright's home in Dayton on December 17, 1936. He had carefully counted the number of members and arranged the chairs in an oval form, but, by oversight, without a chair for himself. As befits a good host he stood for a time until a chair was brought. In the meantime, the regular chairman of the committee being absent, Orville Wright was nominated to preside as chairman of the meeting; whereupon he, standing, undertook to address a seated audience arguing why he should not be elected to this office. The members noted that he was actually making a speech, which caused him to abruptly terminate his remarks, whereupon he was duly elected temporary chairman."[24]

In 1932 Orville drove down to Kitty Hawk for the dedication of the Wright Brothers National Monument, which is now maintained with Big Kill Devil Hill and a replica of the 1903 quarters by the U.S. Park Service. His behavior there was reported in the New York Times magazine:

> "At 61...he is as alert and quick-motioned as he must have been in his youth, as skeptical of all authorities, as cautious and as daring. He drove a heavy car across the Alleghenies from his home in Dayton to Kitty Hawk and did not slow up from his average speed of 60 miles an hour until he dropped into the procession of official cars twenty miles or so from the scene of the celebration.
>
> As the cavalcade arrived at the foot of Kill Devil Hill a military band struck up. The motors ahead discharged their loads of notables - Admirals, Generals, the Secretary of War. The Wright automobile drew up near the speakers' stand. "Where shall I park my car?" inquired the driver mildly of the two young marines on guard. They waved him in the direction of the other chauffeurs before they discovered that this was the hero of the occasion, the man of the moment.
>
> Of all who gathered to commemorate the first flight, the first flier was probably the least conspicuous, the most detached, certainly the least loquacious. In public the most he said was, "Thank you," once in acknowledging Secretary Hurley's speech, again in receiving and stuffing into his pocket the letter written for the occasion by the President."[25]

At the laying of the cornerstone for that monument a few years earlier, Orville had remarked to a congressman from that North Carolina District, "I wonder if this whole thing isn't a mistake. Fifty years from now might be soon enough to determine if this memorial should be built. To do it now seems like an imposition on the taxpayers."[26]

One of Orville's life-long burdens was the leadership role that his success with Wilbur had spawned. To a great extent his response was "accidental" in that without the airplane, and without Wilbur, he would have lived out a quiet and modest life as a merchant/inventor, and never would have developed - would not have had the need to develop - any special insularity or defensiveness towards others. The overriding hypothesis, then, with regard to Orville's abdication of leadership centers on his emotional inability to weather with grace the trials and disappointments of notoriety. The very achievement of the airplane brought with it unwanted and unintended functions - such as attending monument dedications - which Orville truly felt to be an imposition on his privacy rather than part of the whole deal of fame. He shared this sense of imposition with Wilbur, but had not the latter's sense of historical perspective to help him endure. He had

in fact grown used to deferring to Wilbur's leadership as a means of protecting his boyhood preserve of mechanical pleasures.

These statements, I will say again, are more hypothetical than I would prefer them to be, for to a far greater extent than is true of Wilbur, Orville's teen and early adult years are a sort of "lost decade". We know he was busy and most biographers have noted well - because Orville himself saw his own life in this way - the continuities of industry and business that marked his development. But itiis hard to account for the inconsistencies and contradictions in Orville's character - the transformations in his personality at this time in his life. The obstreperous boy described in Kelly's biography is not the mild-mannered, modest, yielding youth we see in the actual record. Yet that boy in many ways lives on just under the surface all through Orville's life. And, as we might expect, we see him most clearly in humour and pranks. Orville's teasing and practical jokes were one of his hallmarks. His teasing especially could be carried too **far and** at those times Wilbur, and Wilbur only, could get away with admonishing him. He responded to Wilbur as an intellectual equal and an equal in work, but emotionally he was dependent on Wilbur's more mature leadership and increasingly confident sense of authority and mission, his self-disciplined command of feelings and his ready communion with the world of adults.

I suspect that the intimate nature of their relationship is one of the more obscured features of their history, and therefore we will take a closer look at it in a later chapter. But now we must ask what made Orville so dependent on his conscientious and serious older brother? How did an independent and assertive boy, ambitious enough in his own entrepreneurial way, adopt such a deferential way, adopt such a deferential and accomodating posture?

The key here lies in the complementary, rather than "opposite", nature of their characters - Orville's extroverted boy to Wilbur's hypermature introvert - and in the fact that Wilbur's role as father's close ally and "lieutenant" marked him as an authority and guide. Somehow Wilbur was granted a leadership role in

Orville's life which the latter generally, though not always, accepted, and I think the reason for this cession of authority to Wilbur was Orville's inarticulated but firm feeling of unpreparedness for adult relations and adult responsibilities.

Orville's teasing and joking offer a glimpse into this aspect of his character. We see at first a youth, then a young man, and finally an adult and elder taking a surprisingly juvenile pleasure in pranks which sometimes seem silly.

In his early twenties Orville took a friend for a ride on a special tandem highwheel bike he and Wilbur had built, and which only he and Wilbur could ride without falling.

> "One afternoon Orville took the rear seat with a boy named Tom Thorne in front. As they tried to steer around a hole in the muddy street, the handlebar caught the leg of the lad in front, which prevented his turning far enough.
>
> Of course there was a spill. Orville from the rear seat managed to land on his feet, but Tom Thorne, with one leg pinioned, was hurled headfirst to the street. When he came up for air none of his features was to be seen, so thoroughly was he plastered with mud. He looked so frightful that none of the boys who saw the mishap showed any amusement. They were afraid he had ruined his face. But Orville at once realized that the soft mud had prevented any injury and his young friend's appearance struck him as the funniest thing he had ever seen. For some moments he was doubled up with mirth, unable to control himself, while the other rider, not exactly indignant but unable to enter into the hilarity, stood trying to gouge the mud out of his eyes with his thumbs."[27]

One doesn't get any explanation of why Orville's judgement of Tom's injury was so much quicker and better than that of everyone else present, and as often happens in Kelly's biography, one has to keep in mind that an Orville in his 60's is recalling several of these juvenile anecdotes with glee, and offering them forth as substantial biography with no apparent awareness that they might indicate anything about him other than a sense of good humour.

His niece Ivonette described one prank by a much older Orville in which the object seems to have been the express enjoyment of another's social discomfort. It occurred during Christmas dinner at Hawthorn Hill, 1919, six months after Ivonette

had married Harold "Scribze" Miller:

> "When we sat down at the table, we all picked up our place cards, which were envelopes bearing each one's name. Each contained a new twenty dollar bill. At Scribze's place was a box of candy. He thanked Uncle Orv for it and nothing more was said for awhile. Then someone spoke up and said to Scribze, 'I'll bet there's a bill in yours somewhere, why don't you look and see?" Scribze said he was satisfied but because we all insisted, he opened the box of candy and went all through it - no money. He was becoming more and more embarrassed by the minute. Uncle Orv was chuckling all through this procedure, but said nothing. Finally someone said, "Why don't you take the box apart? I'm sure it's in there somewhere." That he did, and slipped in under the covering of the box was his twenty dollar bill. Uncle Orv had carefully taken the whole cover off and pasted it back together again. He enjoyed every minute of this prank."[28]

When 14 year-old Carrie Kaylor came to the Wright home in 1900 to help with housework she became one of Orville's favored targets. He was nearly thirty years old at the time. He teasingly took her to task for a series of "offenses", ranging from her short stature to her difficulty in preparing meals just as he liked them.

> "He wondered if she'd ever be tall enough to be much account, and he'd have her stand up to be measured against a set of marks on the frame of the kitchen door. One day Carrie discovered that she could reach the light by standing tiptoe. She rushed to the dining room to tell the news. Orville immediately got up from the table and led her to the door casing. Yes, he said, she really <u>had</u> grown half an inch; she should be allowed to remain in the Wright home.
>
> Most of Mr. Orville's teasing was fun...but at times he would keep it up until he would almost have a person in tears. Then you could count on a word from Mr. Will. When he saw things were getting close to the breaking point, he'd say, 'I guess that's about enough, Orv.' And Mr. Orville would stop instantly. Mr. Orville always listened to Mr. Will, but <u>never</u> to anyone else."[29]

It was not so much a desire to hurt as an awkwardness and immaturity in expressing both affection and dominance that made Orville approach Carrie like a 10 year-old boy pulling pigtails. By way of contrast, several years later he gave her an expensive pocketbook on his return from a business trip, and in early December, 1903, when he returned to Dayton to repair the broken propeller shafts, he complained jokingly that she fed him so much he'd be too heavy to fly.

Carrie remained in the Wright home even after her marriage to Charles Grumbach,

and until Orville's death in January, 1948. He had wished for her to be at his service even in the hospital, saying truly enough after nearly fifty years that "she knows all my cranky little ways."[30] He was quite demanding, as he himself well knew, and showed throughout his life in many small ways the sort of ornery stubbornness that had made his life in school so frustrating for him and for teachers.

When he and Wilbur returned from Kitty Hawk on December 23, 1903 after their successful flights, they had an understandable appetite for good food:

> "Carrie had taken pains to have a good meal ready, and she assured them as they sat down that there was "more of everything in the kitchen." But she had not accurately estimated what a craving Orville would have for fresh milk after weeks without any at Kitty Hawk. When she went to refill his glass for the sixth or seventh time there was not quite enough milk left, so she added just a little water, so little, she thought that surely no one could know. Instantly, though, Orville shouted a bitter protest. He felt grieved, he said, that Carrie would try to cheat him by "dairying" the milk supply. To the end of his life, he never let Carrie forget that episode of the milk at the first home meal after the first flight."[31]

On her very first day of employment with the Wrights, Carrie had been warned by Katharine that Orville could not stand lumpy gravy - "white lump gravy", he called it - and Wilbur had sampled her first effort, thrown it out, and shown her how to prepare it "just so" to Orville's taste.

One of Orville's pranks much later in life involved food again, this time a particularly unamusing masquerade with the Thanksgiving dinner:

> "Nearly all his nieces and nephews preferred dark meat and this time they were surprised that, as Uncle Orv carved, the supply never gave out. One of them remarked, "This is good turkey, but do you know it tastes a little like duck." Then Orville shook with laughter as he turned the platter around to show that the turkey was only a front. Most of the dark meat was duck."[32]

In the same vein he was amused, not irritated, by the misbehavior of some neighborhood children on Halloween:

> "For years Mr. Wright played host to large numbers of neighborhood children, who called at his home on Harman Avenue on "Beggars Night". Each year he would place a large bowl of cookies on the table in the living room and await the coming of the "beggars". News of his lavish giving spread and as the years passed, the number of visitors grew larger. One year the supply

of cookies ran low and he told a group to wait while he went after some more. While he was gone, the youngsters helped themselves to some candy in a bowl and made off, much to the amusement of Mr. Wright."[33]

At Kitty Hawk, Orville's boyish ~~only "sadistic"~~ sense of fun seemed to be directed at small animals. It is not so much that he killed them or didn't kill them that interests one, but the fact that he regarded these events as significant enough to enter into his diary:

Monday, Sep. 8, 1902: "...Killed two mice, one with stick, the other with gun. Chased hungry razorbacks, and finally began work on machine."

Friday, Sept. 26, 1902: "I put in a part of the day in constructing a "death trap" for a poor mouse that has been annoying us by prowling about our kitchen shelves at nights. We are now anxiously awaiting the arrival of the "victim".

Saturday, Sep. 27, 1902: "At 11 o'clock last night I was awakened by the mouse crawling over my face. Will had advised me that I had better get something to cover my head, or I would have it "chewed" off like Guillaume Mona had by the bear. I found on getting up that the little fellow had only come to tell me to put another piece of corn bread in the trap. He had disposed of the first piece. I have sworn "vengeance" on the little fellow for his impudence and insult."

Monday, Oct. 6, 1902: "... The smart little mouse was found dead under trunk."

Wednesday, Oct. 15, 1902: "... I made a "nigger shooter" and am anxiously awaiting the appearance of pig."

Thursday, Oct. 16, 1902: "... In morning I found live starfish on the beach, which I killed with gasoline."[34]

The point here is not to portray Orville as ~~an animal hater or sadist, for he was hardly that~~ or abuser of animals. Rather, the idea is to illustrate a consistently juvenile streak in his behavior, a streak which was often immature in an unintentionally pointed way and which was most evident in his sense of fun and in his demandingness about food.

At the same time, this gave him a great deal of patience with real children, whose fussy and obstreperous ways seemed natural to him. He was not angered by the children who made off with candy on Beggars' Night, and his sympathies in

any adult-child conflict were usually with the child, just as his sympathies lay generally with the underdog in any conflict. In 1907 he and Wilbur spent some months in Paris trying to negotiate a sale of their Flyer to the French government. There was plenty of spare time, which they spent frequently in le Jardin des Tuileries across from their Hotel, the Meurice. Orville wrote his sister about the park and the children who played there:

> "...There are hundreds of iron chairs in the park which rent at 2¢ a day. When you pay your two cents you are given a ticket which entitles you to sit in any chair in the Jardin des Tuileries during that day. A number of women are employed in going about to pounce down on any unsuspecting chap that happens to be occupying a chair and to collect the two cents. As we are in the park every day we sometimes have a collection of these tickets in our pockets for a week or two back. When the women come around we begin hauling them out one at a time. Of course they keep refusing them one after the other, until finally we manage to find the right one.
>
> The parks in Paris are made for the poor people. They are really the only play grounds the children have. You do not see signs to "keep off the grass" like you would see in American parks. Thousands of people come every day to sit under the trees while the children play with their diabolas and hoops and soft rubber balls in the open spots. There are several merry-go-rounds in this park, but none of them have even a grind orgin (sic) to keep up a noise while the thing goes round. They are small and very tame affairs, as you will know when you learn that they are run by a man turning a crank. It is really pathetic to see a crowd of these little French youngsters enjoying themselves riding on such a thing. The little kids hang onto the horses like they were really bucking broncos. Occasionally a bunch of American youngsters come along and make things lively for a while. They jump on and off the horses while the affair is going at full speed - which is never fast sieze the rings by the handfull which they are supposed to spear one at a time with an ice pick, and when the ride is over begin tossing the ice picks (I don't know what they are called here) about among themselves when the man comes around to collect them, till the poor fellow who runs the affair is driven nearly crazy. Of course we feel ashamed of the youngsters and know that they need a good thrashing, but it does seem pleasant to have something happen once in a while that is a little more exciting.
>
> I hear the man driving the people out of the park, which means that it is half past ten, so I will close for tonight."[35]

Orville's sense of humor was not always of this prankster sort. Like Wilbur he could be quite sarcastic, and his teasing was not uniformly juvenile. Yet the difference between them was striking, and never more so than when each responded to Milton's 1907 warnings against vice and corruption in Europe. Wilbur reassured

his father with the sober tones of a good son: "...As to drinking and dissipation of various kinds you may be entirely easy. All the wine I have tasted since leaving home would not fill a single wine glass. I am sure that Orville and Myself will be careful to do nothing which would disgrace the training we received from you and from mother."[36] Orville's reassurance was less austere. "Dear Pop," he wrote, "We have been real good over here. We have been in a lot of the big churches and haven't got drunk yet!"[37]

To his no-nonsense sister Katharine, returning to her teaching duties in September 1902, he joked from the safety of Kitty Hawk: "Send us a list of the first week's victims. I like to see some one else catch it besides us!"[38] He went on to note the scrawny condition of the livestock on the Outer Banks by referring to the "skimmed milk" he and Wilbur were forced to drink - "The best," he said, " - skimmed by the cows themselves." With Charles Taylor's bowed legs he suggested a Pratt truss similar to the one used on their biplane design, and challenged Taylor to "get back at me about Nov. 1st", when they were to return to Dayton. At age 68 he ridiculed efforts by some groups to discount the first Wright flights on grounds that there had been no official witnesses present. "Here is a great opportunity for some one," he wrote Fred Kelly, "to crowd the name of Columbus out of the pages of history. Columbus failed to have "officials" of a regular organization, created for the special purpose of homologatinf discoveries, on hand when he landed in America!"[39]

Attending a political rally in 1891, Orville had written of William McKinley, then campaigning for Governor of Ohio and later to be President, and Joseph Foraker, once Governor of Ohio and later to be a U.S. Senator,

> "McKinley followed in the afternoon with an able speech, so they say, but if I were to listen to many more like it I am afraid I would soon be a free trader. Of course the speech was intended to catch the crowd and on this point it was an admirable success. McKinley is a fine-looking man, has a large head and a very pleasant face. He looks like an honest man.

> Foraker followed him in a humorous speech which was enjoyed more by the crowd than was McKinley's but the speech was far inferior. A few minutes' look at Foraker and I was satisfied and left. If he is an honest man he ought to sue his face for slander."[40]

The climate of moral valuation in the Wright home had lent all the Wrights a flair for strong opinion.

Uncle Orv was a favorite with Lorin's children and demonstrated with them a genuine sympathy and warmth that was never forgotten. Wilbur, on the other hand, could take the children's play for so long and would then lose patience and interest. His favorite form of entertaining Lorin's children was reading to them on his lap. Orville was less intellectual, and enjoyed making fudge for the kids and playing with them in a physical way. He was tireless in all kinds of games. In later life he made toys, often based on his more technical work, and Lorin helped in their manufacture. At Christmas time he and Wilbur would be at the children's toys, repairing and improving them. On one occasion in 1901 when Lorin's two oldest children were invited to a birthday party, "Uncle Orv, happening to go by the house, found Baby Sister in tears because she couldn't go, too ... Uncle Orv consoled her for a few moments by producing some candy and having "a party" on his lap."[41]

Wherever he went Orville always thought of his nieces and nephews at home, as did Wilbur, and they were well supplied by their uncles with gifts and souvenirs, whether of shells from the Outer Banks or the new color postal cards from the capitols of Europe.

The normal course of Orville's development, ~~quite apart from Wilbur,~~ was one in which traits appropriate in boyhood continued to and through adult life but became much less appropriate, less adaptive, and less productive as they did so. Similarly, traits which might have blossomed or grown in their scope often did not - his intellectual interests, for instance, and his warmth for children. And finally, there seems to have been an emotional vitality and joy for Orville

in his boyhood which, when contrasted with his perceptions of adult life, made a subjectively convincing case for refusing to grow up. A combination of events which we will probably never understand adequately brought about this developmental foreclosure. First was his impatient and demanding temperament, impatient not in the sense of being fault-finding or critical of others, but in a more positive sense of eagerness for results. He once remarked in later life, "I can remember when Wilbur and I could hardly wait for morning to come to get at something that interested us. That's happiness!"[42] His satisfaction in work derived from realizing in a tangible, workable, and quick manner the fruits of his effort. Second was his inability to deal emotionally with sadness, grief, and disappointment. He never really accepted these things, tended at first to feel inadequate and incapable, and increasingly as an older man came to blame the world for inflicting upon him so many injustices and grievances. Wilbur's death in 1912 almost finished him off from this perspective, and indeed his life was extraordinarily insular after that time. Mother's death in 1889, ~~and perhaps his own near brush with death from typhoid in 1896,~~ may also have been experienced by him as alien intrusions into life rather than as unfortunate parts of it.

And finally we must consider Orville's halting engagement of adolescence and his ultimate inability to master its sexual and social tasks in a successful way. His pattern was not that of his ascetic brother, but more of a Peter Pan who chose the escapades or escapes of childhood over the anxieties of intimacy, and paid the price in excessive bashfulness and modesty around the opposite sex. His emotional needs remained at a level of dependency and demandingness appropriate to boyhood, and, as they had with Wilbur in 1885, crystallized around an existing somatic injury which excused him from further rough-and-tumble with life's own demands. In the summer of 1915 Orville experienced disabling pain in his left hip area, an apparent sequel to the injuries he had suffered seven years earlier

in 1908, in the Ft. Meyer crash which killed Thomas Selfridge. In fact, Orville had never been free from discomfort following the crash and had regarded his pain as rheumatism until it increased dramatically in 1915. Through September and October of that year, Bishop Wright's diary entries told the story:

9/9/15: "All well but Orville, whose nerves are broken down."

9/13/15: "Orville has been worse for several days."

9/14/15: "He is still quite helpless, but he goes to town."

10/5/15: "Orville has much pain in his limb."

10/6/15: "Orville suffers much, and remains at home." [43]

There was an easing of the pain in November, and then it December it returned. Orville had an "attack" in his lab and was unable to drive home. Charles Grumbach went down to the North Broadway office and drove Orville's car while Orville rode home in an ambulance. For the next two weeks he was bedridden with pain, and on Christmas Day, 1915, a specialist from Cincinnati came to Dayton to consult on the case. A diagnosis of neuralgia was made, and two nurses were assigned to care for Orville at home, to supplement the attentions of ever-present Katharine. By the end of February he was still sick but gradually improving. Yet he was bothered by severe pain for the next five years, and began to suspect that his original injuries had been poorly treated at the Ft. Meyer hospital and inadequately diagnosed all along.

In November, 1920 he visited the Mayo Clinic in Rochester, Minnesota, where he was gratified by the efforts of a team of doctors to do a thorough diagnosis. The cause of his pain was said to be "sciatica", ("a slight movement in the joint between the sacrum and the ilium ... produces a mechanical irritation of the sciatic nerve").[44] He was given a wide belt to wear, drawn tightly around the hips to reduce movement of the bones causing the irritation. This helped, provided he limited his travelling, as the vibrations of trains, autos, and airplanes could

cause painful flare-ups.

Combined with his public speaking phobia and his procrastination in writing, this somatic limit on travel marked very pointedly the boundaries of Orville's engagement with the "outside world". In 1929 he wrote to Frederick Gardner, former Governor of Missouri, "I find that about 500 miles of railroad travel per month is the limit of what I can safely withstand."[45] But as early as 1916, Orville was getting his excuses crossed, claiming that his leg pain had prevented him from answering correspondence, and in 1923 he cited sciatic pain in avoiding a photoportrait session. To Ohio Congressman Roy Fitzgerald, he wrote:

> "Your letter of November 5th found me at home suffering with an attack of sciatica. I am now able to be about again, but it will be some days yet before I will have recovered by strength and be in condition to have a portrait taken as you suggest."[46]

Later, Orville sent the Congressman an autographed photo of the first flight at Kitty Hawk instead of a portrait, saying: "I do not enjoy autographing portraits much more than I do writing letters."

By the mid 1930's, Orville had clamped a restriction on all winter travel, feeling that his pain was aggravated by cold weather. Allowing for a 10 week annual vacation in Canada, that left only the Spring and Autumn months in which he was "unshielded", and at those times he was of course covered by his communication phobias and writing "blocks".

But perhaps the most poignant instance of Orville's dependency came in middle age, when his sister married a fellow Oberlin graduate Harry Haskell, in 1926. Haskell had been a good friend of the Wrights since his newspaper reporting on aviation brought him into their confidence in 1917. Orville had written a generous letter of introduction on Haskell's behalf in July of 1917, describing him as a "very good friend of Katharine and myself. You can talk to Mr. Haskell in just the same way that you would talk to me. You need not be afraid of the

publication of anything you tell him in confidence."[47] They had remained friends through the years, and through the death of Haskell's first wife. But the marriage of Harry and Katharine caused a deep falling out between them and Orville, as their union represented a betrayal of the familial-asexual loyalty Orville had always presumed upon for the gratification of his own needs. There was little communication between them in the three years between Katharine's marriage and her death in 1929.

In December, 1928, Katharine grew ill, prompting the following letter to Orville from Mary Haskell, Harry's sister:

"Dear Mr. Wright,

> You will be as surprised to receive this letter as I am to be writing it, but something has happened that impels me to write. I came to Oberlin to recuperate after an attack of pneumonia ... One day last week ... came a letter from Harry saying that Katharine was in bed with the flu and a 103 temperature. I could not sleep. I may be all wrong, but I kept on wondering - You see when I have written to ask Harry whether he was forgiven for taking away Katharine, he did not answer, and I did not repeat the question, only wondered.
>
> When Harry called me to K. City in '26 to tell me of this prospect, I thought I had never seen him so happy - the only sorrow being that his gain was your loss. But he said, "Katharine will just have to commute between Dayton and K. City." He also remarked, "Of course Katharine's being sorry for me has much to do with her marrying me."
>
> Before our Mother died we spoke together of the possibility of that marriage and Mother said, "She will never leave her brother!" But you see it is true that Harry was more alone than almost any man, because all the rest of the family were missionaries and our interests became so far apart - and our sympathies. Perhaps dear Katharine reasoned it out that if she married Harry she could spend lots of time in Dayton and so make you both happy, but of course if she were not married, she couldn't go freely to K. City and so couldn't help Harry much. Is not love blind sometimes in its reasoning? I felt dreadfully about the dilemma myself but then I concluded that Harry too is a human being, and if God had pity on him in giving Katharine this love to him, would not the great Father in some way make up the loss to her brother - even tho it be to show him the difference between the finite and infinite? ... I would not wish to preach; you yourself know that eternal things are more real when circumstances around one are hard. This letter isn't one that has to be answered. Just take it as ... a suggestion from another world - a suggestion of a wonderful Christmas present to the One whose birthday we will celebrate soon - to Him and to those dear ones in K. City..."[48]

Katharine died three months later, on March 3, 1929, with Orville by her side. Whether at Mary Haskell's prompting or not, Orville made his peace with Katharine and Harry, but I rather doubt that he ever understood at all his sister's own needs, wants, and guilts. It was not a family - it was not an age - where women's needs were considered seriously in their own right.

Perhaps the only person who might have been able to draw Orville out of his self-doubts and dependencies was Wilbur, yet he died at just that moment in their collaboration when new resources of initiative would have to be tapped.

By the time Wilbur emerged from his long incubation to join Orville in the West Side News, Orville was 17 to Wilbur's 22. First and foremost Wilbur offered a collaborative companionship of mutual understanding and acceptance - emotional support, in a way, and of course Orville meant the same to his brother at a time in their lives when peers were going off into marriages and careers. An adjustment of roles took place, with Wilbur being "Editor" and Orville "Publisher". Wilbur came into what had been his younger brother's operation as chief spokesman, and Orville apparently had no objection. In Wilbur Orville found something of an alter-ego, but in more adult form. Wilbur had endured injury and had rather courageously seen his mother through her years of suffering and into the grave while Orville busied himself with printing. I think Orville sensed in Wilbur a certain emotional strength or maturity, a source of budding confidence about life, which up to that point and for some years thereafter was not so evident to others in the Wright family. In turn, Wilbur understood Orville's needs - so much so that he was able both to cater to and limit them - thus earning not only Orville's social deference but also his respect for a certain tone of authority in Wilbur. Wilbur was one of the few adults, in or out of the family, who ever earned this level of respect from Orville. Though some accomodations and adjustments had to be made - Orville resented at times

Wilbur's talking down to him and his use of the word "I" when "we" would have been more accurate[49] - the emotional complementarity of older and younger brother sealed a very intimate bond. That union was complex, but certainly a very important part of it for Orville was the structuring and protective companionship of an older comrade, a "parent" who was not an "adult", whose emotional authority had been won with patience, and whose love was so bound by familial loyalty and asceticism that its security would never be in question.

For Orville, deference to Wilbur was neither uncomfortable nor unnatural for him. Yet in a way it virtually assured that Orville's foreclosure on adult emotional development would be longstanding. It was a mutual dependency which led very rapidly to a brilliant product (the airplane), but which left Orville lost when his brother died so suddenly in 1912. It was also a relationship in which Orville's independence and contrariness was always something of a background issue, in spite of his deference. In a way its success hinged on his never growing up. He was not likely to do so anyway, but the intimate collaboration with Wilbur made it emotionally unnecessary for him to struggle unduly with the challenges of life's relational intimacies and disappointments.

BACHELORHOOD

On the morning of January 26, 1948, the day of his fatal heart attack, Orville was preparing to go to his office in downtown Dayton. Carrie helped him with his coat and as he and Carrie's husband left, Orville stepped aside to let Mr. Grumbach through the door first. "We menfolks," he reminded her jokingly, "have got to stick together."

It was a casual remark, but is nonetheless as neat a statement as one could hope to find of Orville's attitude toward the sexes. His accomodation to the needs of men - letting Grumbach through the door ahead of him, or letting Wilbur be spokesman - was meant to be reciprocated by loyalty and comradeship.

Orville the schoolyard "General" had been able to direct and lead his peers in school to the exclusion of girls, as anyone would expect of schoolboys. In later life though, from about adolescence onward, a different approach would be required to assure companionship in the face of divisive or "individualizing" heterosexual attractions. Orville discovered the power of friendly deference. This was not by any design, and was not in any way conspiratorial or even intentional. He simply had developed a congenial, unassuming way to walk into the hearts of others when the aggressive enthusiasm of his boyhood would no longer work. By the time he had reached his thirties he was firmly convinced that women were sources of anxiety rather than security, that they tended to disturb things more than calm them, that they were more of that alien brand of intrusion into his psychological sanctuary than they were part of the natural process of life and of relations with others. He became, in other words, a rather classically confirmed bachelor, and for most of the classic reasons.

I do not think he was a misogynist, though. He did not dislike women so long as they stayed outside the perimeter of his privacy. He was very close to Katharine, and she to him, and they lived together for most of their lives in a very intimate way. Carrie Kaylor Grumbach was also very close to Orville for nearly fifty years, and was close by, attending to his needs, when he died in Miami Valley Hospital.

What Orville could not do was reciprocate in an intimate relationship. He could understand women as maids or mother-substitutes, as was Carrie, and he could understand them as asexual confidants and home managers, as was Katharine. But he never allowed himself the vulnerability of a reciprocal intimacy which might have blossomed into sexual love.

There were moments in his youth when he seemed to approach the edge of some tentative move toward the opposite sex. The family acknowledged his boyish

dependence and sensed the charm it might have for women. This lay behind Wilbur's warnings to him in the Ft. Meyer hospital in 1908. Also, Orville's personality was more evidently sociable and warm than Wilbur's, and he had shown an interest in appearances and mixed-sex company. He had been with Katharine and a group of young people on a camping trip in the summer of 1899 while Wilbur was home wrestling with the problem of lateral control, and he seemed for all the world headed down a predictable road to marriage and family. He was fastidious in his clothing where Wilbur was indifferent to style and fashion. It was Orville's clothing that "so made the man" of Wilbur when he wore it to Chicago in 1901 to speak before the Western Society of Engineers. And in 1907 when Wilbur was forced - to Katharine's great satisfaction - to buy formal clothing in London for his business affairs, Orville marched off to "Perry Meredith's" in Dayton to buy the same items, eagerly awaiting the call to join his brother.[50] He played the popular mandolin like many young people today would play the guitar (brother Lorin also owned a mandolin), not so much out of musical interest but from a wish to share in conventional social diversion, to be popular, to have fun. He brought the instrument with him to Kitty Hawk, showing a certain flexibility of purpose, if not romanticism, not found in Wilbur. And when the brothers returned to Dayton with their then not so fashionable suntans, Orville set to bleaching his face with lemon and soap. Carrie remembered his face being pale long before Wilbur's.[51]

All through the airplane development years, roughly 1900-1908, both Wilbur and Orville showed an interest in Katharine's college friends. Her letters to them were often filled with alumni news, especially during the annual June reunion. Wilbur's interest was detachedly avuncular in tone, but Orville's was more bashful. From Kitty Hawk, in May, 1908 he wrote to Katharine, "Give my 'love and the like' to Agnes and Winnifred."[52] And while staying at the Cosmos

Club in Washington, D.C. during the Army flight trials of 1908 he wrote to his sister, "I am meeting some very handsome young ladies!...Most of them I meet in bunches, and I will have an awful hard time trying to think of their names if I meet them again."[53] The previous year in Paris he had met a young German girl - he did not give her age - who was living there to study French. She spoke English fairly well and Orville made of her a friendly acquaintance for a few days before he left for London. That was it - no more and no less.

And that was, generally speaking, the sum of Orville's heterosexual contacts. He was friendly without being intimate, distant without being aloof or threatening, approachable without being really receptive, perhaps interested in the opposite sex but without the motivation or purpose to follow through. Interestingly, one of his favorite novels was Booth Tarkington's "Seventeen", a light story of a turn-of-the-century, small-midwestern town youth, love-struck in his efforts to win the heart of a snobbish and spoiled rich girl. On the basis of this book, which highlights both the shortsightedness and the humorous awkwardness of adolescent attractions, Orville was prepared to regard Tarkington as a great fiction writer. By way of contrast, he found Balzac's work contained "too much mystery and blood and thunder for steady diet."[54]

Orville would have enjoyed the fun in courtship and dating, the gaffs and faux pas which made serious feelings appear light or inconsequential, or which reversed embryonic patterns of adult relating and sent them back to the level of juvenile play. However, this humor would have masked a feeling that he was not quite up to the task of negotiating a workable intimacy with a woman, of developing it from the teasing stages of courtship into a deepier, riskier relation.

Frankly, it is hard to say what might have happened to Orville's "love life", if we might use that term, had it not been for Wilbur and the flying machine. Had he married he would certainly not have been the first late-Victorian man whose

boyish capacity for intimacy and whose attachment to the male clan failed to keep him from the altar. But just at the point where such things might have happened - he was almost 28 when Wilbur wrote the Smithsonian for information on flying - the flying business arose to demand his attention and afford him opportunity for his favored form of adventure and invention, mechanical creativity. Charles Tayler remembered that "both the boys were mentally flying all the time and simply didn't think about girls."[55] Flying afforded Orville an opportunity to grow intellectually, to use his sharp mind in a unique competitive/complementary way with Wilbur, and it offered an industrious means of further delaying his developmental resolution of adolescent vulnerability.

Not knowing just how much of a committment in time or energy the whole process would take, Orville jumped on board and soon became so intimate a collaborator and contributor that the effort became fully as much a product of his own mind as of Wilbur's. He was "hooked" and enjoyed almost every minute of it. There was little chance in the years 1900-1909 that he would abandon this collaborative effort to take up any courtship.

Fame and fortune brought an element into this picture that further complicated any possibility of heterosexual attachment for Orville. Wilbur's unfortunate "divorce" scandal of 1909 is one example of the sort of thing I have in mind. As wealthy and well-known bachelors, the Wrights became the target of matchmaking and scheming, of both well-and ill-intentioned publicity and social attention. Already sensitized to the point of irritated touchiness to any attempt by others to latch onto or misrepresent their accomplishment, they tended toward a suspicion of women and women's attentions as well. In 1910 Orville wrote Wilbur from Alabama, where he was training pilots to fly in exhibitions for the Wright Company:

> "Well, who do you suppose is here that was at Le Mans, Pau, Rome, etc? I surely saw her in the dining room the other evening. I inquired of one of the waiters, and he said she was evidently a northern woman or a foreigner for he could hardly understand what she said."[56]

There is no further information about this woman - only a cryptic suspicion shared between bachelors.

In the litigious and suspicious context of marketing their invention and defending their claims, the Wrights grew very protective around their inner circle of family and a few good friends. Many people who would have liked to have been considered among their friends were left out in the cold (Hart O. Berg, Wilbur's "buffer" at Le Mans, was one such man). Sometimes the most honest of intentions was misperceived by the Wrights, or not perceived at all. Certainly if trust is the basis of intimacy, there was little of it to spread around once the airplane had become an international phenomenon. Orville retained his genial and mild approach to people but was nonetheless caught up in Wilbur's righteous and insular way of handling things. He took to heart his older brother's stated and implied warnings against intimate attachments. Yet from the Wrights' viewpoint there were moments when these warnings appeared well-justified.

In 1928 the widow of Leon Bollée, the automobile manufacturer whose factory had been generously placed at Wilbur's disposal during his flights at Le Mans, came to the United States with her daughter Elizabeth. Bollée had died in 1913, the World War had swallowed up much of Carlotta Bollée's resources, and her daughter had in 1927 married a titled but not very wealthy nobleman. With Elizabeth married off, Carlotta was left with shrinking funds and a son Fred, emotionally unstable ~~whose psychological balance was clinically precarious~~. When the widow visited Dayton with her daughter, Orville asked one of his nieces, Ivonette, to stay at his Oakwood home during her visit. Carlotta dropped broad hints at marriage,

saying that she would love to see Niagara Falls before returning to Europe. The situation was made stickier for Orville by the fact that the Wrights were indebted to the late Bollée for his kindnesses back in 1908. Orville had never enjoyed talking to women unless they were accompanied by their husbands. "He found disturbing an unattended woman who showed any interest in him."[57]

When Carlotta Bollée mentioned her wish to see Niagara Falls, Orville saw his opportunity:

> "Oh yes," spoke up Orville, "you musn't miss Niagara Falls. It's not always easy, though, to get train reservations. Let me see what I can do," and he rushed to another room to telephone. When he returned he said to his guest, "You are fortunate. I was able to engage you a berth on the train that leaves at four o'clock this afternoon."[58]

Carlotta left for Niagara, and from there she returned to France. In 1934 she wrote Orville telling him that she had lost a great deal of money in the Depression. She asked him for a $10,000 loan and he cabled back to France his inability to do so. In 1939 Fred Bollée wrote on his mother's behalf, again asking for money, and again Orville refused. Finally, in December 1945, with Fred in a public insane asylum and the Bollées' money wiped out utterly by yet another World War, 67 year-old Carlotta wrote a rambling, disjointed, pathetic letter from France, in which she begged for money in the name of her departed husband. It is not known whether Orville ever responded to this appeal, but chances are very good he did not. He may well have doubted its truthfulness, and perhaps he had a small case of shivers thinking back to that 1928 visit by the widow Bollée to Dayton. ~~If bachelorhood had ever needed confirming, the plight~~ of poor Mrs. Bollée and her son was confirmation enough for the timid.

Around 1912 the Wrights' business was ~~levelling off to a plateau of predictable expansion.~~ clearly successful and expanding. Medals, honors, and international acclaim were theirs. Patent litigation, though draining, was slowly going their way, and their extensive travels might have been curtailed. Here again was a time ripe for some

settling down, some domesticity, some extrafamilial attachment. And here again, I suspect Orville might have developed some interest in this sort of intimacy. But in May Wilbur died, and Orville was forced once again to deal with life's cruel and pointless intrusions into his peace and equanimity. He was also forced in this terribly sad and grieved way to touch his own emotional vulnerability, his inability to face intimate feelings adequately, without a sense of being overwhelmed or betrayed by fate. He retreated to the safety of his close relationship with Katharine, withdrew from the increasingly complicated aircraft industry (which rapidly passed him by), and lived his remaining years in a kind of semi-retirement in the mansion he and Wilbur had designed for the family just outside Dayton. On the day of Wilbur's funeral Bishop Wright wrote in his diary,

> "Wilbur is dead and buried! We are all stricken. It does not seem possible that he is gone. Probably Orville and Katharine felt his loss most. They say little. ...I ride 20 miles with Orville in auto."[59]

As with Susan Koerner Wright, there is no mention of Orville's reactions, feelings, thoughts, etc. to Wilbur's death in the Kelly biography. There is a suggestion that he was taken ill in the weeks following Wilbur's funeral, for he received a letter from a fellow vice-president of the Wright Company, Andrew Freedman, saying

> "I trust that you are now feeling quite well and in health again and that your family is more reconciled to your great loss."[60]

Whether the illness was brought on in any way by grief is just unknown, as is the nature of the illness itself. There was little verbal or emotional expression during and after Wilbur's death. McMahon's biography of the Wrights reports that there was no music at Wilbur's funeral, that the service lasted only 20 minutes, and that an old United Brethren Church acquaintance from Indiana read the words of "A Mighty Fortress is Our God", which was not sung.[61]

The whole family seems to have been dumbstruck, and spent weeks just driving around the Dayton countryside in a new automobile Orville had bought ten days before Wilbur's death. Almost every day for the next three months they rode - Orville, Katharine, Milton, and sometimes Lorin's children - to Xenia, Springboro, Centerville, Miami, Oakwood, Brookville, Johnsville, Richmond - distracting themselves in an endless and aimless kind of motion. In August, Orville, Katharine, and two nieces - Leontine and Ivonette - drove to Niagara Falls and then to Washington, D.C. Even through the Fall months the pleasures of motoring automobile provided diversion from their grief, ~~as well as the more apparent pleasures of motoring.~~

In 1913 Orville's driving habits went the way of many aviators'. Milton recorded in his diary on June 29, "Orville was threatened with arrest by a cop for rapid driving," and the very next day he "came near running over a 9 year-old girl who stopped in the way of his car."[62] Orville was a fast driver all his life and became predictable absorbed with his automobiles. Interestingly, it was not the engine which attracted him (he thought the factory did a good enough job of tuning it), but various suspension systems and seats intended to reduce vibration and make driving more comfortable. In this he proved as fussy as he was with food.

Certainly one effect of Wilbur's death was to recast the relationship of Orville and Katharine in even more intimate form. They had always been close - perhaps because they were the youngest, or because they shared the same birthday. In 1883, 12 year-old Orville had spent the enormous sum of $2 on a special doll for Katharine at Christmas (he had been so excited that he could not wait for morning, and told her Christmas Eve what she was going to receive from him), and in 1898 he presented her a solitaire diamond ring on her graduation from Oberlin College. They furnished the mansion at Hawthorn Hill together, lived there together, and when Bishop Wright passed away in 1917 they became virtually

a couple.

On March 9, 1917 they received by train from a New Jersey kennel a St. Bernard puupy which they named Scipio. Orville had specified to the breeder that he would be "very particular about the markings". They doted on Scipio as if he were a child. From her June reunion at Oberlin in 1917 Katharine telegraphed Orville, "Home Wednesday evening at six sorry if you and Scipio are lonely without me."[63] By the following year she was referring to Scipio as "Little One", and writing Orville, then vacationing in Canada, "Mrs. Patterson came over the other evening and spent the evening. I haven't been so very lonesome!!! But I wouldn't mind seeing the Little One and Master..."[64]

> "After you were gone I thought of several things I wanted to say to you and felt a bit lonesome, so I thought 'I'll get Scipio to come on the porch with me!' But the pen was empty and "little one" was gone!" [65]

In July 1919, Orville took an extended automobile trip out West. Katharine ("Mistus") expressed her loneliness back at Hawthorn Hill in a letter to her brother:

> "The Little One wishes Master would come back. Mistus is on an awful tear and didn't give L.O. any breakfast - just told him what he was, instead! And all this just because L.O., after being gooder than anything all day - and Mistus being good too, taking L.O. to the woods in the morning and for a walk on the hill just before supper - as I say, all this disagreeableness on the part of Mistus just because L.O. after a nice walk just before dark, suddenly darted across the street into Watterson's place and made off, Mistus trying to follow in the deep woods and briars. Mistus hunted for an hour and finally went to bed, resolved that there would be no more twilight walks, no matter how innocent someone acted & looked.
>
> So today Little One is sulking in his pen; Mistus is "mad" and every thing is going wrong. Mistus shut the gate to the pen so L.O. couldn't get in. When Charlie (Grumbach) went down this morning L.O. was on the East porch and growled at Charlie! Some One scolded Mistus a little bit Saturday night, because she tried to hurry him too much about going to bed. ... Mistus will ask some one early this evening, if he will be a "good doggie now" and if Some One wags his tail and says "Yes" he will get a good supper, with some nice cookies for dessert." [66]

In the winter of 1921, the Wright home endured yet another wrenching death with the untimely passing of Scipio. It is not clear from the record how he

died. Orville wrote of his dog a year later,

> "Because he was so large every one was afraid of him. He was a fine companion, very intelligent, with many human traits. To me he was a regular person." 67

Scipio was never replaced, and one wonders whether or not Katharine and Orville had had their fill of grief and loss. Perhaps that is why Katharine could not marry without guilt, and why Orville felt so bitterly abandoned when she "left" him for Harry Haskell in 1926. His relationship to Katharine had been a sort of "marriage", just as Scipio had been sort of a "person". It was one which did not expose him - until Haskell's intervention - to any great emotional risk. For what confirmed Orville in bachelorhood was not so much an aversion to women or even sexuality, but an aversion to the vulnerabilities of emotion. He went through some very stressful times in his life with the emotional equipment of ~~mid-adolescence~~ boyhood, and therefore he found it true that ~~boyhood~~ family and the male peer group afforded the safest haven for his pleasures. A willingness to tolerate this and to refrain from any challenge to his defensive retrenchment were required credentials for any who shared his life after about 1915. This was as true for his official biographer Kelly as it was for Carrie, his housekeeper, and his secretary Mabel Beck, who watched over his privacy with the thorough zeal of a first class watchdog (she was not popular with Lorin's children). Miss Beck came to work for the Wrights during Wilbur's involvement with patent litigation, and she stayed on until Orville's death in 1948. Her instinctive protectionism and sensitivity to petty political considerations is illustrated in the following incident with Major Lester Gardner, founder of the Institute of the Aeronautical Sciences, who wrote her in 1945 for some information about an early Wright photograph:

> "Having received from Roy Knabenshue, who had managed the Wright exhibition team in the old days, a picture showing the device (a yardstick altimeter) in the hands of a seemingly unidentified person, Gardner consulted Miss Beck, who recognized the user as Frank Russell, the first manager of the

> Wright Company. Not aware of the friction that had existed between Knabenshue and Russell, Gardner wrote Russell for an explanation of the instrument and, when the reply proved inadequate, sent Russell's description to Orville Wright for correction before publishing it with the photograph. At this point Miss Beck, reflecting that Knabenshue, her immediate superior in the Wright Company in 1910 and 1911, had perhaps deliberately withheld the identity of Russell, and not wishing to displease him by any publicity Russell might receive as a result of the information she had volunteered, asked Gardner to suppress Russell's name if the photograph were published, as no credit for the device was due him. The upshot was that Gardner did not use the photograph."[68]

Orville endorsed his secretary's attitude (neither he nor Wilbur had been pleased with Russell as manager, while Russell felt that no mortal could have pleased the Wrights at that time), writing somewhat disingenuously to Gardner,

> "I am afraid you made a sort of faux pas with Miss Beck. You may have to do some prying to get information out of her in the future; at least until she knows just how you are going to use it. I think our files of Wilbur's letters furnish the foundation on which Miss Beck's attitude is based. She typed many of them and hasn't forgotten them."[69]

It was the sort of apology one makes when one's guard dog has dutifully bitten a harmless intruder. Well, such was the sophistication of intellectual inquiry which surrounded early efforts to flesh out the discovery of flight. Miss Beck was bequeathed $3000 a year for life in Orville's will. Charles Taylor, an old friend whose important hand in the Flyer had long since disappeared into an obscure series of minor mechanic's jobs in California, got $800 a year for life (plus several hundred dollars Orville had given him during the Depression years). Carrie Grumbach, perhaps because she was married and less in need of independent financial support, received $2000 a year. The remainder of the $1,023,903 estate was divided among nieces and nephews, minus $300,000 to Oberlin College and $40,000 to Earlham College (Harry Truman's alma mater) in Indiana. The value of the original 1903 Flyer was listed in Orville's will as one dollar.

## INVENTION AND WORK

The most consistent theme in Orville's long life is that of mechanical invention. From his boyhood days of putting oilcans filled with water on the

stove to watch water shoot out the spout, to his "chawin' gum corporation", his kites, woodcuts, printing presses, bicycles, an automatic stabilizer for the airplane (for which he won the Collier Trophy in 1913), the split-wing flap (1920-21), and a number of interesting but minor achievements in later life, Orville Wright was at heart a natural inventor. Wilbur might have become any number of things - teacher, scientist, lawyer, minister, or writer. Orville, on the other hand, could only have been an inventor, or perhaps an engineer. While brilliant intellectually - both he and Wilbur were surely of superior intelligence - his interests were more definite and circumscribed. How things work and how to make them work better became his twin passions early in life, wedded only loosely to an impulse for profit. Even in his later years, when he liked to argue economics and politics with friends, his principal thought was how to make the system work better. This allowed him to entertain such notions as socialism without much real concern for the more irrational political connotations such ideas aroused in Americans, and certainly in the wealthy Americans who formed his social circle in Dayton. Orville was interested in the gasoline engine and the automobile long before Wilbur thought such a thing would ever be practical. Of the two experts, Orville was the unofficial "expert" on their engines.

He never bothered to patent most of his inventions after the airplane. He made self-opening doors and movable roofs for his vaction home on an island he had purchased in the Georgian Bay (tinkering with the house and its appliances was his main vacation activity). He made an automatic record changer which preceded the one commonly in use today. He altered the plumbing system in the vacation home to provide a steady stream of cold drinking water, and designed the entire plumbing system at Hawthorn Hill. Back in the bicycle shop days he had improved upon any device he used, including calculators and typewriters. He and

Wilbur had rigged a bell-and-rope device that would inform them in the upstairs workshop whether a downstairs customer was a "real" customer or just wanted air for his tires. Orville and Wilbur had at one time replaced all the old radiators in the 7 Hawthorn St. home with more efficient ones of their own design. The front porch of that house had been built by "the boys", who turned the decorative wooden poles on a lathe they had constructed.

Orville found the stock automobile springs on most of his cars over the years too jarring for his back. He solved this problem in one of his earlier autos, a Pierce-Arrow with hydraulic "air springs" over each wheel, "...by cutting off the tops of the air bottles and replacing them with slightly larger tops. Then to avoid the side-to-side swaying of the car he affixed a pendulum arrangement to the springs. When the body of the car swayed to one side the pendulum arrangement shut a valve which stopped the swaying tendency."[70] This type of mechanism had in fact been the central feature of the automatic stabilizer Orville designed for the airplane in 1913.

Orville identified very strongly with inventors, many of whom would write him after the invention of the airplane, and he sympathized with their difficulties in obtaining and protecting patents. In 1914 he responded to a request from Franklin K. Lane, Secretary of the Interior, and submitted his suggestions as to needed changes in patent law. He claimed that "inventors were poorly protected by the law, and that unless they had large financial backing to maintain their claims through long-drawn-out litigation in the courts, patents were of no value to them."[71] It was a lesson he and Wilbur had learned at great financial and emotional cost and which, Orville believed, had contributed substantially to his brother's weak resistance to typhus infection.

Yet in spite of the clear record of Orville's inventiveness over a lifetime,

the airplane stands out as a qualitatively different enterprise. It was not something he would have done alone and, more importantly, not something he alone would have conceived. Of course, Wilbur would never have done it alone either, and the mutuality of the deed will be the subject of our next chapter. The point I wish to make here is that of the requisite vision. Given the broad vision of the problem (this was, I think, Wilbur's contribution) Orville was a master of thinking up ways to solve various engineering problems and to improve upon previous designs. But he probably would not have imagined the whole. I say that because neither before nor after the airplane is there any instance of Orville's conceiving a project of such scope as the flying machine. For that matter, it was a "first" in Wilbur's life as well, and the way things were going with business cares and patent suits it may have been his last had he lived beyond age 45. But for all that, we can at least say that Wilbur did produce that one sweeping, daring, inventive vision of controlled flight. Orville's style was different. Given a car, he would improve it. He could make calculators work better. He redesigned bicycles to make them stronger and smoother. And given a flying machine, he would have no peer in tinkering the thing to a rapid state of functional utility. He was not just a mechanic, though his mechanical skills were superb. He was a brilliant inventor, solid mathematician, and superlative engineer. He was a "detail man" whose theoretical knowledge was exercised only insofar as it bore relation to the specific task at hand. Wilbur was, for all his pragmatism, more of a "theory man" whose knowledge of mechanical detail was exercised always against the backdrop of theoretical analysis of the task. For Wilbur the problem was framed as an issue of the principles of flight, with mechanical contrivances used to elucidate and clarify those principles. For Orville, the problem was to figure out how things which

already worked, worked, with general principles of theory assuming a rather secondary role.

These styles had large areas of overlap on a working basis, actually, and I have exaggerated them to make a point, the point being that Orville's range of conceptualization and interest was limited by his practical bent for utility and improvement on pre-existing creations. If creativity might be defined as conceiving comething that has never existed before, something wholly new, then Orville was not by that definition creative. He took what was given and improved on it. He took what worked and made it work better.

Apart from the question of scope or vision there was one feature which characterized Orville's work as a boy and as a young man. That was his enthusiasm and his initiative. He had great energy which was largely immune to moodiness, and he threw himself into projects with an unreserved sense of involvement. Therein lay an important part of his formula for success - his natural sense of industry and initiative. Even after fame and fortune were assured, he continued working on aeronautical improvements and returned to Kitty Hawk with Lorin and a few other men in October, 1911 to test an automatic stabilizing device he was developing. As it turned out, he never tested the device but did establish a world record by soaring on October 24 for 9 minutes and 45 seconds. The record stood for ten years.

There was every reason to believe that Orville would continue his pattern of enthusiastic invention in a career of continuous work with Wilbur. But Wilbur died. And while Orville continued to work, something very vital went out of his own life with the loss of his fraternal partner.

> "...Orville Wright, in all his thirty-six remaining years of life, could never bring himself to think of Wilbur in any other way than as always in the next room, ready at a call to join in whatever business was at hand. In this spirit Orville Wright lived out his days."[72]

It had always been their plan to make a large profit, sell out the business, and go into full-time research. As a team they might have done some more extraordinary work. Orville carried out this plan on his own, and carried on in a way that Wilbur would have understood. He finished construction of Hawthorn Hill and occupied it in April, 1914 with Katharine and his father. He continued as busy president of the Wright Company, and even delivered a prepared lecture - his first and last public address - on the "Stability of Aeroplanes" - on May20, 1914 at the Franklin Institute in Philadelphia. He flew frequently until 1915 and personally tested every modification and improvement on a Wright plane. He continued all his life to pass over what had become the standard flying gear of leathers, helmet, and goggles, choosing instead the ordinary business dress he and Wilbur had always worn even at Kitty Hawk.

In October, 1915, at the time of onset of his sciatica symptoms, Orville completed sale of the Wright Company to a group of businessmen. A last minute offer by Robert J. Collier (of Collier's magazine) to have Harry Payne Whitney buy and free the Wrights' airplane patents for general use in the United States, thereby ridding the industry of destructive patent battles, was turned down by Orville on grounds that the sale was already legally binding, and that the buyers would not wish to change their minds. Perhaps. It is not clear what efforts were made by Orville, if any, to change the conditions of the sale at that point, and whether he even felt that freeing the patents would be a good idea. If he were indeed carrying on as Wilbur would have, he probably wished to see the suits pursued to their righteous conclusion. This was done, and the end result was to enmesh the reputations of the Wrights, the Smithsonian Institution, and a number of otherwise well-thought-of folks in a very unpleasant and even scandalous brew. The Wrights were in fact being badly mistreated by the Smithsonian and by some of their competitors, and one can hardly fault Orville if he felt that patent

litigation was the only redress available. Yet the combination of his silence and semi-reclusiveness, and the litigious struggle to have the Wrights' claims properly recognized, led to a sullen atmosphere in the decades after Wilbur's passing.

Orville actually grew into the combative role of defender of the Wright priority in the discovery of flight and showed himself capable of an ire and a righteousness worthy of his brother's memory. But in his heart he was not really a combatant. The long and shameful struggle with Secretary Charles Walcott of the Smithsonian, and with Glenn Curtiss whose radically redesigned Langley "Aerodrome" "flew" in a short, straight-line hop on Hammondsport Lake in New York in an effort to prove that Langley's machine was the first one capable of flight, embittered Orville and pushed him farther and farther into self-protective isolation. Unfortunately, this controversy lasted for nearly all of Orville's life. It was not resolved until 1942 and very nearly prevented the Library of Congress from receiving the valuable Wright Papers.

By 1916 Orville had "retired" after a fashion from his duties as president of the Wright Company and had established a role as consulting engineer to the company and general aviation consultant to a number of governmental and military bodies. (During World War II he was given the rank of Major while he worked in this consultative role to the Army Air Service.) In June, 1916 he began to set up a small laboratory at 15 North Broadway in Dayton, and in 1919 he took himself entirely off salary with the Wright Company (then known as the Dayton-Wright Company) "without withdrawing from any of my duties as consulting engineer."[73] He established a routine that was as regular as Wilbur's had ever been.

> "Almost until the day of his death Orville maintained a clock-like schedule between his Oakwood home and his N. Broadway laboratory. Daily he rode to work, driving his own car most of the time, put in long hours in the laboratory, then drove home again in the evening. One never heard of the work that he did in his laboratory except by reference to "one of my projects". [74]

History has not been kind in its judgement of Orville's long hours in the lab. Time magazine summed up his contribution with a bland objectivity in reporting the news of his death in 1948:

> "...The rush of aerial development passed Orville. He built himself a laboratory in Dayton, spent his time puttering in it. After 1918 he rarely flew. He had fractured a hip (this is obviously an error) in an early crash, and any vibration caused him excruciating pain. Occasionally an aircraft company asked his advice. He still loved to build gadgets."[75]

And a week earlier, immediately following his death, Time noted that "The death of Wilbur in 1912 left him very much alone. He did not want for money and he had had his fill of fame. Although friendly and generally accessible to visitors he sedulously avoided the spotlight."[76]

On October 10, 1947 Orville suffered a heart attack - he referred to it as "my accident" - while walking up the steps of the National Cash Register building in downtown Dayton. He spent several days in the hospital and was discharged to the resumption of his daily rounds, driving his car to and from the office at the age of 76. On January 24, 1948 he wrote what was probably his last letter. Addressed to the General Electric Company, its content is metaphoric of the last decades of his life:

> "I have a 10-H.P. General Electric motor that I would like to sell. This motor was purchased in 1917 for use in my laboratory on a wind tunnel. I would estimate it had about 200 hours of running. I am quoting from the invoice of the General Electric Company of Schenectady of February 10, 1917: 1 KT-322-10-10-720/685-220V 60 cyc "B" motor 1186788 DRL-1891926 amps 28. Would you be interested in purchasing it or do you know of an interested purchaser?"[77]

Two days later, on the 26th, Orville awoke and prepared to leave Hawthorn Hill for his office downtown. While getting ready he discovered that something was malfunctioning in the front doorbell and in the electric bell system he had rigged up connecting the kitchen to various rooms in the house. For the next half-hour or so he was up and down the stairs, out in the snow and back again several times, but was unable to fix the buzzer. Carrie then helped him on with his coat,

and he and Mr. Grumbach left the house together. At the office he suffered another heart attack, was taken to the hospital, and died five days later on January 31, 1948.

A portrait of Orville would be incomplete without mention of a certain blunt honesty which he shared with Wilbur, but which in his younger days he had usually softened in public with an overriding sensitivity to the possibility of alienating others. But Wilbur's absence, the provocative actions of Smithsonian officials to diminish the Wrights' accomplishments, and the security of advancing age and prestige prodded Orville into a more natural frankness in his expressions, and a wholly more natural stubborness and independence in his views. On the 41st anniversary of the first flight Orville was interviewed in his office by a reporter:

> "With elbows resting on the arms of his office chair and his fingers interlaced across his chest, Wright extended one of his rarely-given interviews.
>
> His voice was gentle but firm. There were barbs in some of his words but frequently a twinkle in his bright blue eyes.
>
> Asked what he considered the outstanding aviation development of the year 1944, he immediately replied: 'Well, I would have to award it to an enemy.' He made no explanation, but it was clear he was thinking of Germany's V-I robot against which the United Nations have yet to find a counter weapon. It is characteristic of him to give the devil his due.
>
> ...Wright is critical of news 'passed out by the Office of War Information and military censors'. He observes considerable 'exaggeration of the progress of military arms,' and thinks it is harmful. He likewise disapproves of government departments laying claim to new devices such as jet propulsion. ...He points out that they were mostly the development of individuals in commercial manufacturing plants. 'Government and business organizations,' says Wright, 'frequently claim the credit for ideas of individuals. Some of the Government bureaus do too much blowing of their own horns.'[78]

In an interview on his 75th birthday for a Dayton paper, Orville declared that though he was not a Communist and had never voted for a socialist, "I do believe there are some good things in socialism which should be given serious consideration. ...The average price of an article sold in the open market is five times what was paid to the workman who produced it. ...This is due to un-

restricted competition which...has become the most serious defect in our national economy. This condition must be corrected."[79] In 1930, with much of the country in the depths of economic depression, Orville showed both his social conscience and his entrepreneurial self-sufficiency when he mentioned to an interviewer that he felt uncomfortable living almost wholly on the income from securities.[80]

In 1939 Orville was asked to verify a list of names for a monument at Simms field to early flyers for the Wright Company who trained under the Wright brothers. The question arose as to whether it was proper to include the name of Grover C. Bergdoll, who trained at Simms but was later jailed as World War I's most notorious draft evader. Orville argued that to omit Bergdoll's name would be to distort the facts. The name was included on the monument when Orville threatened to remove his own name, as well as Wilbur's, if Bergdoll's were not included.

It is a shame that the frank strength of Orville's honesty and his insistence on factual accounting were turned always outwards and never took on the character of blunt self-appraisal, as Dan did with Wilbur. It is also a shame that Orville's notions of factual accuracy were rarely broader than was required to correct this or that account of some incident or another. He never took on, nor did he really feel the need to take on, the larger historical task of telling the story of the birth of aviation, or the story of his own life with Wilbur and the Wright family.

But perhaps we expect too much of a man who was launched out of his natural element of boyish invention precisely because he was so good at it, and who forever after lived in a world of fame and historical obligation which entrapped rather than enriched his years. Of all the ambitious and dedicated men who struggled to fly late in the nineteenth century, Wilbur included, Orville was perhaps the only one who cared little for the historical or social implications of the accomplishment, or for the glory which it might bring. Ever the in-

ventor, he recalled in 1933 his state of mind on December 17, 1903:

> "I don't recall any sensation. I was so interested in whether the thing would work or not that I did not have time to think about it or gather any impressions."[81]

In the forty-five years of the remainder of his life, Orville never did find the time to digest the magnitude of what he and his brother had done. He was basketed in the fame of history's first flight and elevated to uncomfortable heights by the hot air of an exploding industry. Indeed, it became far more than an industry. Words like "era", "age", "movement", and "revolution" have all travelled easily behind the word "aviation". Orville's contribution has grown no clearer under the influence of all this hot air, nor would it benefit from any gratuitous deflation. I hope this analysis has not been overly of the latter sort.

TOGETHER

Like the airplane itself, the successful relationship between Orville and Wilbur can only be appreciated as a complex balancing of forces, some similar and some quite opposite, yielding a net dynamic tension which moved things along smoothly and rapidly. Perhaps the most overlooked features in this brotherly bond are those involving the interaction of their differences, for it is in such complementarity that one finds the motive source - the lifting power - of their common energy.

But such differences would never have reached a working equilibrium without a solid base of mutual similarities to provide necessary emotional confidence and security. For all their differences, Wilbur and Orville shared a large ground of common traits. These covered some basic psychological territory - the sort of territory which, if not shared, often prompts conflicts and bitterness between people working on an otherwise close team. These crucial commonalities were ones of basic moral value, work habits and standards, social and interpersonal judgements, and general areas of interest.

Getting a job done with someone else is not simply a matter splitting up responsibilities and advancing towards the goal. If things are to go well, and particularly if they are to go quickly, a whole complex of adjustments have to be made, many of which occur at fairly dim levels of awareness. A well-oiled, cooperative result is probably rather rare, often not because of differing talents but because of differing perceptions of the task, differing attitudes, or varying ways of defining the goals. Fraternity alone is not sufficient to guarantee harmony on a job, but in the Wrights' case it helped considerably. Had Wilbur and Orville not been brothers, chances are slim that they would have been able to work together as easily as they did. Fraternity provided them with a lifetime of familiarity with each other's small quirks and habits, but also gave them a

shared psychological climate, a common set of assumptions about what sorts of things are important, forbidden, trustworthy, enjoyable, or necessary in life. Once they began work on the airplane they did not have to spend time ironing these things out. Their moral outlook reflected the standards of "Christian decency" preached over and over by their father, to take just one example of how things might have gone wrong. Imagine the row which would have followed if one of them had decided that flying on the Sabbath was necessary for success, or if one drank while the other regarded alcohol as the lifeblood of degeneracy.

Captain William Tate, Wilbur's host on his first arrival at Kitty Hawk and the man whose personal warmth had sealed Wilbur's choice of Kitty Hawk as an experimental site, said of the Wrights:

> "They were Christian gentlemen and moral to the core. During all the years of my acquaintance and close association with them, I never heard one of them utter an oath, never saw one of them get angry, never heard one of them tell a story that even bordered on the obscene. They were scientific men, skilled and evenly balanced, and nothing I can ever say can pay them too high a tribute!" [1]

The firmness of their training in the Wright home had been tempered by love and by a liberality toward ideas, especially scientific or mechanical ideas. But this intellectual tolerance did not extend to the small vices, those behavioral barometers consulted so earnestly at the turn of the century by the solid citizens of a fluid land. For instance, Bishop Wright's anxiety over Europe's influence on his sons serves not only to illustrate his belief in the innate depravity of all men (including his sons, and himself), but also the enormous investment placed on minor "vices" as indices of more pervasive moral slippage. His letters to Orville and Wilbur are peppered with admonitions, and with invidious comparisons to the assumedly decadent "Old World" Europeans:

> 8/4/07: "Cultivate all worthy American friends and the American legation. A Frenchman is just as good as an American, under like circumstances, but human nature is curious."

8/7/07: "I hope you will not dishonor the training I have given you on Sabbath, temperance, etc. They are such as the best element of the American people approve, and it is to your interests, as well as those of the morality of America (and France) that you honor them."

9/5/07: "I want you to show the foreigners that you are tetotalers, and in every way maintain that high character which it is most proper to have, and which in the eyes of the best in America, is the most approved."

10/30/07: "Be men - men of the highest type. Personally, mentally, morally, and spiritually. Be clean, temperate, soberminded, and great souled. See two worlds and live for both. You can in humility and simplicity have an influence that will bless multitudes. The world is longing for one merely human example."[2]

The following year brought international fame to Wilbur at Le Mans and to Orville at Ft. Meyer, and Bishop Wright felt compelled to warn his sons on this occasion about the pitfalls of notoriety, even as he shared in the joy of their triumph. "What is Fame!", he wrote Wilbur in August, 1908. "I have realized its utter vanity. Yet your names will be inscribed along with Fulton and Stephenson for all time."[3] And two weeks later, to Wilbur again:

"Indeed they treat you in France as if you were a resurrected Columbus, and the people gaze as if you had fallen down from Jupiter. Enjoy fame ere its decadence, for I have realized the emptiness of its trumpet blasts. You and Orville are, however, secure of a place...in the temple of fame."[4]

Two days later Orville received a similar message, in verse form - probably a hymn fragment:

"You and Wilbur will have a place in the temple of fame. ...But remember, you are mortal,

'And false the light on glory's plume
as fading hues of even;
There's nothing bright but heaven.' "[5]

On September 14, Milton wrote to Wilbur in sympathy of the latter's being away from home, comparing his lot to that of Orville, who "has the advantage of some Dayton friends, but perhaps an undue proportion of them undesirable."[6] Citing newspaper praise for his sons, he said, "Fame enough. It may ebb and flow."[7] And when, following Orville's accident on September 17, Wilbur set a

world's record by flying for 1 hour, 31 minutes, and 25 seconds over the farmlands near Le Mans, Milton offered his congratulations - along with the verse he had quoted for Orville about the futility of fame.

In 1909 when Wilbur was training flyers for European buyers and promoters of the Wright plane, he and Orville - who had joined him at Pau with Katharine in January - received yet another moral commentary from their father:

> "I am glad to notice they (the newspapers) credit Wilbur for Sunday observance and freedom from tobacco. It will do more good to Europe than all the worth of the money you will ever get out of your invention. European countries need reformation; and our own country needs to beware."[8]

Orville and Wilbur took their father's standards to heart, and though Wilbur was more inclined towards a missionary seriousness about his behavior than the genial Orville, neither deviated from strict adherence to the letter and spirit of the family's moral guidelines. Orville seems always to have worried his father and Wilbur a bit, but the reason lay not in any real suspicion of Orville's character. Rather, they feared that his accomodating sociability would somehow, and inadvertantly, compromise him. Milton and Wilbur had a solitary, zealous, and righteous energy which reinforced their moral strength from the inside out. Orville, it was felt, needed reinforcing from the outside in. To be sure, Orville was not so temperamentally self-sufficient or zealous, but he was really in no greater danger of corruption. His non-conformity was exclusive to the realm of mechanical invention, and until much later in life most other things simply disinterested him.

The point in this discussion of the Wrights' shared moral outlook is not so much that they didn't smoke or drink, did honor the Sabbath, and therefore never came into conflict over these things. The real point is that over the years they were taught a common self-discipline and a common standard of self-denial. Each expected to sacrifice personal comforts, to deny or postpone personal pleasure in the interest of some higher goal, and to associate such self-denial with all

that was proper and worthwhile in life. Lilienthal's last words - "Sacrifices must be made" - just before he dies in 1896 fell on ears in Dayton, Ohio which understood in their own shared terms the meaning and value of personal sacrifice. Therefore, there was never any divisiveness brought on by the harsh climate at Kitty Hawk, the mosquitoes and thin rations, the great investment of time and energy required between 1900 and 1905. The only real disagreements of a non-technical sort they ever had came in 1906-1908, when they were often separated by an ocean, dependent on incomplete communications, and terribly anxious about closing a deal on which they agreed completely. Working in close, even intimate, quarters - they slept only inches apart on canvas hammocks slung from the shed beams at Kitty Hawk - sharing space, meals, and endless hours together, not once did anyone ever observe them in a personal argument. Their "arguments", when they did occur, were always in the one area where disagreement and diversity had been allowed and encouraged in the Wright home - that of scientific ideas and theories.

Friends and visitors often noted the apparent violence of these encounters between Wilbur and Orville. Whether the heat of the discussion was fueled by repressed or displaced angers is one of those unanswerable questions which I am deliberately trying to avoid. There is no real evidence for this hypothesis, but even if there were, it was of no great harm to the Wrights or to the progress of aviation that they could channel disagreements so constructively and within such clear boundaries. Such channeling often draws the line, perhaps thin enough at all times, separating civilized conduct from its primitive shadows.

To sum up, if morality is the application of ethical or valuative standards to behavior, Orville and Wilbur held the same standards and the same morality, and, more importantly, behaved overtly and without evident difficulty in mutual accordance with those guidelines. This was important ground to establish in common before setting off on a trying and time-consuming mission involving close

personal union, often under conditions of near isolation and great physical stress.

Interpersonally, the Wrights sense of human motivation - their psychology - was colored by the theology of innate depravity which, if they did not quite embrace it wholesale, nevertheless promoted a certain insular mistrust of any but the closest friends. Yet no doctrine of depravity could take firm hold in the expansionist, progressive, perfectible America of the late nineteenth century, where technology and immigration were transforming New World culture from a like-minded agrarianism to a pluralistic consumerism, and higher standards of morality were losing ground to a higher standard of living.

The Wrights were solidly rooted in the conservatism of the mid-Western farm, and their expectations of how others behave were thus split between a feeling of trust for similar folk - decent, hard-working, honorable, community-minded, etc. - and suspicion of dissimilar folk, such as Catholic immigrants in the big cities or from decadent Europe, or Jews. Bishop Wright had some rather strong anti-Semitic prejudices which he passed along to his sons. He also had a "split" attitude towards Europe - on the one hand he needled Wilbur to see all the historic sights and tell the folks back home in great detail, especially Reuchlin who would never have the chance to make such a trip himself. Yet on the other hand he kept up his string of warnings to Wilbur about European decadence. He advised caution in the continent of overindulgence and loose self-discipline (as he saw it), even as he urged exposure to the uplifting and edifying activities of touring and sight-seeing. All in all, it was by no means an unusual posture for a middle-American of the time. Wilbur, of course, dutifullt toed the line by making of himself a sort of moral example to the French (who benefited mainly by tailoring a new line of fashions for the aviation age, featuring hobble skirts for the ladies and "Vreecht" caps for the men) and by exercising an almost harshly ascetic

self-discipline. His occasional bursts of hostility towards the French were grounded largely in his perception of them as other than self-controlled, pragmatic and efficient.

Orville found a different way to survive in the Old World of temptations and impracticalities. He put on a show of genial and humble conformity (which worried his father and Wilbur) while retreating to the boyhood safety of small-town simplicity and harmless "vices" such as pranks and practical jokes. When in Europe or Washington, D.C., he seems to have plastered on himself a conventional appearance and demeanor which was deceptively easy-going. Perhaps a bit self-conscious and uncomfortable socially, he survivedtthrough a process of blithe smiling and disarming affability.

In a very important way, then, Orville and Wilbur were different when it came to their individual ways of handling interpersonal stress and negotiating unknown or unfamiliar social/moral territory. At the same time, I think they did what people often do when caught between a rather directive moral upbringing and a plastic or evolving social ethic - they lept their judgements to themselves and proceeded on the grounds of genera; decency to steer the middle course between moral capitulation and high-handed superiority. The Wrights were fine examples of the sort of neighborly but emotionally distant decency which remains a strong feature of Americans even today. In a mobile society one can afford neither to alienate nor to overinvest in others. One tends instead to keep a "decent interval".

Decency meant a certain equality and evenhandedness in one's approach to others, no matter how high or low their rung on the social ladder. Decency also meant that one did not make a lot of clatter while climbing those rungs. One never forgot one's roots, never took on airs or affected superiority. On the other hand, one never begrudged the meritorious their escalations. After all,

any boy could grow up to be President in the New World. Decency meant the rational application of reciprocity to financial obligation, so that debts between friends would not sour the relationship. To be self-sufficient, to pull your own weight, counted for a lot. But when you needed help, your credit was as good as your word, and the latter was as binding as a contract. Decency meant a modest but not self-demeaning attitude towards one's talents. Debts to teachers, parents, co-workers, etc. were acknowledged in success lest one be perceived as a "swell" or as ungrateful to the community of support which lay behind any achievement. This was, more or less, the moral veneer over the meritocracy and "darwinism" of American opportunism. But, of course, it would have been indecent to speak this way. One had to get along smoothly with people of diverse backgrounds (Octave Chanute was a master of this), avoiding where possible a preachy or critical posture, suffering the foibles of others in silence while making a nonetheless indelible mental record. Much more so than today, decency meant for middle-class townsmen such as the Wrights adherence to countless details of etiquette and dress, and sensitivity to a host of social proprieties and conventions. But foremost of all it meant a democratic sense of justice in one's dealings with others, a sense of "fair play" - which remains perhaps the most salient and original feature of the American social order. The most impassioned complaint an American learns to register is "No Fair!", and America is, of course, one of the few countries in the world where anyone listens to this complaint.

Captain Tate's memory of the Wrights as "Christian gentlemen" appears to be a description of a couple of Boy Scouts, but it is really not that at all. It is a sentiment, expressed in the language of God-fearing propriety, that Orville and Wilbur were decent people - like Captain William Tate himself. The Tates welcomed Wilbur into their home after his perilous crossing of Albermarle Sound with Israel Perry, and fed him immediately a huge breakfast of eggs and ham when

they learned he was hungry. When Wilbur requested temporary room and board until he could set up camp, and he overheard in the dining room Mrs. Tate's doubts about whether they could provide adequately for him, Wilbur's reply was a classic instance of the interpersonal ethic of decency at work. As Capt. Tate remembered some twenty-five years after the event, Wilbur said something like the following:

> "When I came into your house as a roomer for a short while the obligation is all on me. I should not expect you to revolutionize your domestic system to suit me, but I should be considerate enough to subordinate myself to your system so as not to entail any extra hardship on you. I'll be satisfied to live as you live."

Said Tate, "He won, and in our memory is still a winner, having showed that courtesy, which is the true mark of a gentleman, is 'consideration for others'."[9]

There is a tendency on the part of those who knew the Wrights to describe their sense of interpersonal ethics in language suitable for a Sunday school lecture before a group of Cub Scouts. The subject really can endure a more scrutinized treatment, and I wonder if it has never received it either because observers sharing the Wrights' sense of decency have seen nothing of special note, or because the language of daily ethics is frozen rather early in life.

We should note that all was not always well between the Wrights and the Outer Banks fishermen who, apart from William Tate, felt strongly the now-worn dictum that if God had intended man to fly he would have given him wings. But "their uniform courtesy to everyone had built up a respect and regard for 'the two nuts' which tempered very greatly the attitude which prevailed at first."[10] This was not simply a matter of being nice and friendly but involved a serious, self-determined quality which said "We mean business" to the skeptical Kitty Hawkers. It was a matter of overcoming the "crank" image by the workmanlike application of pragmatism and efficiency, which in the Wrights' case was simply characterological - it required no special effort. They employed several

men in their four years of experimental work and they paid them an honest wage for a full day's work, which involved helping with such tasks as building the sheds, cutting firewood during the 1903 season, helping to carry the glider up the dunes and launching it, and hauling supplies. In their relations with these men the Wrights were respectful and a bit formal, keeping a distance between themselves and the hired help which they felt would encourage discipline and good work. This management-labor relation between the Wrights and those Kitty Hawk men who helped them has been clouded over by time and by the more purely volunteer efforts of several men from the Outer Banks lifesaving station in the final days of 1903. But it was a very distant attitude of businesslike seriousness, honest employment, non-nonsense labor, and equity in wages and treatment which "won over" the fishermen. (The final success of the Wrights has also cast a rosy hue over the memories of some Kitty Hawkers, many of whom to this day take immense pride in having had some association, however minor, with the first flight.)

On only one occasion did the Wrights' strict interpretation of their roles and the obligations of employment lead to an incident. This happened with Dan Tate, William Tate's half-brother. Orville described the dispute in a letter to Katharine on November 1, 1903:

> "...About the only news is that of the strike last Wednesday. I believe I told you that about two weeks after we got here Dan Tate came down one Monday morning with the news that the price of fish had gone up, and that he would like to know just how long we expected to stay, and as to whether we were depending on him for help. Well, what it finally sifted down to was a demand for an increase of wages with the condition that we were to pay him by the week (seven dollars. Regular wages down here from $3.50 to $4.50 per week), whether we had work for him or not. We agreed to this on condition that he stay with us as long as we remained, and that he appear for work every morning promptly at 8 o'clock, and work 10 hours. We volunteered to allow him one hour a day for getting back and forth from work, and to furnish him his dinner. Of course we had no work for him excepting to do up the morning and noon dishes, with about half a day a week on the hills gliding. Whenever we set him at any work about the building, he would do so much damage with his awkwardness that we found it more profitable to let him sit around. Of course he was soon spoiled, and even went so far as to complain when any work was wanted on the hill. No trouble developed, however,

> until the early part of this week when a cold snap struck us. When Will told him to go over to the beach and get some driftwood he struck, saying he wouldn't do it, as it was not reasonable when we could buy a cord for $3.00 of Jesse Baum. The result was he took his hat and left for home."[11]

Looking back on this dispute we can suspect that it was not idleness that spoiled Dan Tate but makework. It was one of the limitations of the Wrights' work ethic, the work ethic of the time, that management rarely appreciated labor's need for some intrinsic reward and meaningful participation in the larger task. In this the Wrights merely reflected the ideas of their day, that labor was purchased like any other commodity and could generally be treated as such. Of all people the Wrights should have appreciated the pitfalls of separating labor from intrinsic interest, but in 1903 it would have been asking a lot to extent this notion to hired help. It was sufficient justice to pay a man more than he would have earned at another job in order to guarantee his availability.

The ethic of leadership by skill and knowledge rather than simply social or economic class was an advance which America was making rapidly. It still led to the formation of something like an "aristocracy", but was nevertheless more egalitarian than Old World notions. In France, Wilbur's unselfconscious application of his craftsmanship and his instinctive need to work on all aspects of the Flyer, from the grimiest to the most sublime, made him a workingman's hero in the stratified society of Le Mans in 1908. French aviators at the time were generally either independently and flashily wealthy (like Santos-Dumont, Brazilian-born heir to a coffee fortune), or were military officers, or were otherwise distinguished from ordinary folk. They typically left any mechanical or construction work on their aircraft to "mechanics" rather than stoop personally to manual labor. Into this scene came an ascetic Ohion with an absent-minded disregard for the fineries of dress and appearance, who out of exasperation with the Bariquand motor company cancelled their contract to build his engine and built it himself; who slept with his machine in a simple shed with an earthen

floor; whose own fingers were roughened and even injured from the construction of his machine; whose arm and chest had been badly scalded while he personally tested the operation of a motor; who rose early every morning, washed with the cold water available in the field, and kept workingman's hours; whose manners and dress were unpretentious, even plain; whose speech was sparse, simple, and reserved; who ate his lunch on his lap when the whistle blew at Leon Bollée's factory; and who, on top of all this, succeeded far beyond the accomplishments of any man who had ever tried flight. Wilbur wrote to his father in August, 1908:

> "The men down at Bollée's shop have taken up a collection to buy me a testimonial of their appreciation. They say that I, too, am a workman."[12]

Harry Combs describes in his book "Kill Devil Hill" the affection which grew up between the French factory workers and Wilbur. It was not an affection of comaraderie, but rather one of respect and admiration:

> "It did not take long at the Bollee factory for word to spread that here was a man so simple in his work and his daily conduct that he must be considered a great man, one with a scientific outlook on life. A genius, perhaps, but a man who, above all else, was not ostentatious; a man who put on no airs and thought of himself as no more than an equal. ... 'Veelbure Reet' was very close in sound to the French words 'vieille burette', old oilcan. This is what they named him in their affection. Old Oilcan, the American from that place in Ohio."[13]

Decency meant tying self-esteem to your talent and your contribution and not to your background, your wealth, or your connections. It also meant the preservation of a bedrock sense of political equality - of mutual respect and obligation in a civic sense - even in the presence of very different levels of talent and varying qualities in contribution to the community. Decency, in other words, meant many things American and few things European at the time, though to be sure there was never a shortage of indecent Americans or of decent Europeans. It was therefore not surprising that the European stage highlighted so dramatically the democratic and "spiritual" qualities of Wilbur Wright. The aversion to

show, the willful indifference to fame, the almost gothic sobriety of purpose have all led most observers of the Wrights to conclude with only partial accuracy that "there was...little glamour about them as men."[14] Or, "There is an appalling simplicity about the Wrights. They seem to have been predestined."[15] Alexander Klemin hypothesized that the absence of "flashing traits of character, those dramatic sayings which occur in the lives of other great men" was due to an intense concentration of the Wrights' energies on the problem of flying, leaving no room for the sort of flair one associates with notoriety.[16]

The Wrights would have been the first to object if greatness and quietness were made mutually exclusive. But if indeed they were appalingly simple about anything, it was in what we would call "public relations" rather than in their own characters. They frankly mistrusted and disliked any form of public attention, never learned to use it or adapt to it, and therefore went down in history with an image largely as described in the Philadelphia Press in 1908:

> "They look like a pair of clerks in a village hardware store, whose pleasure it is to attend the Wednesday night prayer meeting. ... nothing devilish or daring about them."

Orville, then in Washington to prepare for the Army trials, was described as "slim, sedate, and placid, the very antithesis of what an airship sailor should be." Bishop Wright, who clipped the article and sent it to Orville, thought it highly complimentary, regretting only that the reporters "sadly miss the devotional tendency! Yet you owe your training and standing to the Church."[17]

The Wrights hid their desire for insularity and their mistrust of people behind a facade of being just "plain folks". Trying to head off a Dayton parade in their honor in 1909, which they felt was being organized more for the interests of politicians and newspaper promoters than for the celebration of the Wrights' achievements, Orville wrote to the head of the Herald Publishing Co. in Dayton to derail the idea. "I would not wish to so interfere with plans as to wound the

feelings of our fellow-townsmen in their desire to do us honor; yet I know that my brother, as well as myself, would prefer to quietly return and live among you as we have in the past." The parade went on in June, with Orville and Wilbur reluctantly complying with public pressures to cooperate.[18]

This near cult of the virtuous, ordinary man - the bicycle makers from Dayton - became the dominant historical motif for understanding the Wright brothers. It was not an accurate one insofar as it failed to explain how these men had worked their way to prominent positions in international business and in the history of aeronautic science. Yet from their point of view it was a convenient motif for shunning publicity, for dodging personal probes, and for getting on with their work. It was also a comfortable one in that it preserved their moral status as decent, community-oriented men. If Bishop Wright's fear of fame was that it would somehow corrupt the moral fibre of his sons, their own more contemporary fear was that it would erode the straightforward and uncomplicated decency that had cemented them comfortably into the quiet mesh of a working Ohio town. To be drawn towards the narcissus of publicity was not so much a moral issue for them as a social one. Their continued work depended on weaving their accomplishment back into the fabric of Dayton life and on turning aside the sweep and clamor of the moment. Orville was particularly shy in this respect. At Orville's funeral in 1948 at the First Baptist Church in Dayton, the Rev. Charles Seasholes eulogized him as "a genius, yet a man who was just one of folks like us - middle class, Mid-Western American, with simple, devout parents, and simple and modest way of life."[19]

The word connecting genius to middle-class status in Dayton was not "and"; it was "yet". Orville never forgot that, nor did he have to. He was not really driven internally to expand his own sense of accomplishment beyond the relatively narrow scope of inventor and gadgeteer. Wilbur, on the other hand, died before re-integration into Dayton life became an issue for him. I suspect,

however, that he might have grown into the role of "greatness" if time had given him more room to maneuver. Orville's public persona after Wilbur's death can be seen as a frozen memorial to this position, a kind of perpetual flame to what once had been, rather than a light to lead the way forward. Though in many ways it might have been a noble rationalization for felt inadequacies, Orville's sedulous avoiding of the spotlight after 1912 was probably part of a prolonged mourning, a kind of self-immobilzation in memory of his lost brother. One gets the feeling that to have done otherwise, to have gone on in a new direction without Wilbur, would have been, well, simply indecent.

Actually, the inaccurate popular treatment of the Wright brothers as small-town mechanics who ingeniously but naively stumbled upon a path to success well sign-posted by brighter, better-trained minds prompts some questioning of our spirit of opportunity and our faith in our own creative powers. It is almost as though many find it hard to believe that ordinary (i.e., not wealthy, nor well-positioned) persons might succeed at extraordinary levels of competence. The attempts to downplay the Wrights' genious or to credit others such as Octave Chanute or Samuel Langley with the lion's share of original thinking behind the Wright Flyer, would in themselves fill a book. It is sometimes said that heros are created for the purpose of later levelling them at the lowest common denominator. Yet the Wrights were not levelled by popular opinion. The greatest distortions came from academicians, formally trained scientiests, and by ambitious men whose reputations, fortunes, and egos hinged on cornering a slice of the Wright pie for their own consumption. The ingredients here were simply greed and ambition, of which the aviation industry, like any other, had more than its share in the heady decades following the spartan event at Kitty Hawk. Things deteriorated so badly and so rapidly that one story was widely circulated crediting Katharine Wright, who had a college degree and whatever

cerebral magic accrued thereby, with the mathematical "formula" and figuring behind her brothers' merely mechanical cleverness. An editorial in the June 2, 1912 Cincinnati Commercial Tribune noted Wilbur's death by paying tribute to his sister as the discoverer of flight:

> "Had it not been for her they would now be repairing old bicycles in Dayton, and no one loved to account to her that credit more than did her dead brother Wilbur. When they first confided to her their idea of making a toy to fly she read everything she could find written on aeronautics. As fast as the boys learned the name of a new book on the subject it was Katharine who took of her small earnings as teacher in the public schoolroom in Dayton and sent away for it. It was she who sat long hours at night making the mathematical calculations to prove that it was possible for man to fly. She knew it was a possibility long before her brothers had demonstrated it - and though a woman she kept the secret ... She is modest and retiring, except when her brothers needed her. It is to her that great sympathy is due."[20]

To make matters even more gallingly inaccurate, the editorial was reprinted as fact in the Oberlin Alumni Magazine, a fellow Oberlinian, and long-time friend, Louis Lord ('97), tried to correct the error about Katharine ('98):

> "I wish I could confirm the report that she aided them in solving the intricate mathematical problems that confronted them in developing new laws of aeronautics, but recollections of our required mathematics and a reverence for the sacred truth compel to state that this is not true."[21]

The Wrights learned the hard way that others' preconceived notions of what one should be able to attain are far more determining of final opinion, at least in the short run, than are the plain facts of the matter. Most people, including their closest friends during those years - George Spratt and Octave Chanute - psychologically could not allow the Wrights such a feat as the exclusive solution of the problem of manned flight. Therefore, one very unfortunate consequence of their humble and "decent" posture was a consistent tendency by others to underestimate them. They were not flashy "airship sailors", nor were they credentialed intellectuals, nor were they idiosyncratic scientiests - they were nothing like what the "Discoverers of Flight" were expected to be. Complaining of Edward Chalmers Huffaker's attitudes in the 1901 camp at Kitty Hawk, Wilbur wrote his father,

> "He is astonished at our mechanical facility and, as he has attributed his own failures to the lack of this, he thinks the problem solved when these difficulties are overcome, while we expect to find further difficulties of a theoretical nature which must be met by new mechanical designs."[22]

Apart from his indecent personal hygiene and poor workmanship, Huffaker was irritating to the Wrights because he was unable to alter his egoistic notions that he already knew all the principles of flight, while lacking only a few good woodworkers and mechanics to build a solid machine. In fact, history has demonstrated Huffaker's knowledge of principles to be as erratic as his constructive talents.[23]

Octave Chanute's underestimation of the Wrights was, as we have seen, particularly upsetting to them because he of all people should have seen the facts. He had in his own hands, in the form of the correspondence with Wilbur during 1900-1905, as careful a piece of documentation as anyone could have sought. He had actually conducted this correspondence partly for just such documentation. Yet he too continued to allow his own investment and his preconceived ideas about the Wrights to bias and revise reality. He died with a firm conviction that the Wrights' sole and greatest achievement had been to mount a motor on a glider whose design had been well-established and proven years earlier - by Octabe Chanute.

Well, the purpose of all this is not to go on defending the Wrights, but to illustrate how the rigid maintenance of interpersonal decency and composure in human relationships united the brothers at first in a shared code of conduct and later in a more righteous defense against libel and detraction - detraction which was brought on almost because they were so deceptively "simple" and good, and therefore, as anyone could reason, incapable of genious and insufficient to meet the demands of greatness. The theme seems to have been something like "if God had meant these men to discover flight, he would have given them Ph.D.'s.

This was one negative consequence of their rather flat and polite interpersonal style. There were, on the other hand, positive consequences as well. The Wrights were almost invariably regarded with respect, if not affection, and often enough with affection as well. Their daily lives - as opposed to those "great moments" such as parades and ceremonies - were marked with numerous gestures bespeaking a sincere wish to do the right thing and to attend properly to the feelings of others. In July, 1901, when Orville, Wilbur, Spratt, and Huffaker were battling mosquitoes and heat on the Outer Banks, Orville wrote of their hardships to Katharine and closed his letter with considerate thought of Carrie and Charles Taylor, who was minding the shop back home:

> "Tell Carrie I will write to her in a few days, at least at the first opportunity. Tell Mr. Taylor of what is going on, or give him our letters to read. I suspect it is a little tiresome running the shop all alone. I will write again in a few days."[24]

And when Wilbur refused to accept $10 that George Spratt had sent him for camp expenses at the end of the 1902 season, he politely promised to send the money back in a later letter "as I do not wish that money to be the first thing you see when you open the letter." Wilbur offered the following explanation to Spratt of mutual debts and credits:

> "We refused to accept any payment from either Mr. Chanute, Mr. Herring, or my brother Lorin, for camp expenses so we see no reason to make an exception in your case. Moreover, we feel that your help was worth more than your board, so you owe us nothing anyhow."[25]

Little did Wilbur know, nor could he, that Spratt would one day take this simple politeness as a "confession" by the Wrights of their indebtedness to him for their theoretical progress instead of the straightforward pleasure of his company.

The Wrights had been raised to avoid financial obligations and to have just as much money as required to avoid being a burden to others. They grew up guarding their independence, and both by inclination and by design they very carefully dodged any financial help from anyone during their experimental work.

Their intent was plainly stated - to avoid the possibility that such sponsorship might tempt the donor to lay claim to a share in the credit for the invention. The doctrine of innate depravity insulated them to a degree against any naive trust in human nature, but they were not so cynical that they engaged in any shady manipulations of their own. In fact, a large part of the explanation of the Wrights' sense of marketing and business can be found in their steering a solitary, independent, middle path between trust and cynicism, with the result that when they tried to "go public" in 1906, no one would believe them! They agreed totally in this self-sufficient approach, and therefore were able to proceed with one mind not only during the experimental and development years of 1900-1905, but even during the difficult marketing years of 1906 - 1908. Shared values about the desirability of secrecy, the need to remain in control of the marketing process at all times and the danger of premature exhibitions made potentially divisive areas ones of great fraternal consolidation and unanimity. If they had not been so alike in their outlooks, surely the partnership would have strained to the breaking point or beyond under the pressures of negotiating with international forces and governmental obduracies. The whole enterprise was as distastefully necessary to Orville as it was to Wilbur, and there was no question between them but that the optimal route was the one which would lead to a quick fortune and allow them to escape the aggressive, aggrandizing world of business for the satisfactions of the laboratory/workshop in Dayton.

Similar in their moral outlook and in the more secularized morality of decent fairness towards others, Orville and Wilbur were, as outlined already, cemented with a firm, even rigid, defensiveness against intrusion by others into their privacy, and against the perils of duplicity by competitors. This insularity was remarkably stiff at times and served as the social correlate of

the brothers' internal control over "untrustworthy" feelings and impulses. The binding family structure of the Wright core had served to reinforce internal controls in the family members and led also to reinforcement of a defensive posture towards the outside world.

Now, Orville and Wilbur each had different reasons for insularity, as we have seen, but whatever the individual dynamics there is little doubt that it was a trait shared in common and to a great degree. Why was this so marked a feature in their common life as well as in their individual psychologies? The answer, I think, lies in the importance of their common bond, a fear of anything disturbing it, and a consequently high need for control in all circumstances where that bond might be threatened. Perhaps the most obvious instance of threat to the fraternal bond was marriage, and we have seen how Wilbur and Orville maintained a mutual vigilance against feminine "encroachment" and a shared assumption about the divisive power of sexual feeling and sexual attraction. This, of course, would imply that for the Wrights sexual feeling was not simply sublimated but was also both repressed on some levels and actively avoided on others, particularly the social. To maintain their own fraternal union each had to be willing to sacrifice a whole area of psychological life, that of sexual intimacy. This they seemed ready enough to do. Yet marriage and/or intimacy were not the only situations in which external attractions might divide one or both brothers in their internal loyalties. Greed and power were others.

Greed was handled largely by a self-disciplined sense of property and a moderation in its acquisition. They were not gluttinous characters in any sense of the word, and their appetities for personal possession had never been encouraged in the family, either by excessive pandering or by an over-deprivation. Thrifty with money and appreciative of small economies and the overriding virtue of saving (as opposed to investment or speculation), Susan and

Milton Wright had managed a home in which property was squarely in its place - a means to an end, important but not of supreme value. The understanding, manipulation, or improvement of things was always valued above acquisition or possession. The Wrights were uncomfortable with what they felt to be a certain unfortunate but necessary predatory streak in the successful pursuit of property.

Wilbur quickly discovered in the years 1901-1905 that men of science and letters were no less aggressive and acquisitive in their own way than businessmen. "We do not think", he had written to Chanute in July of 1901, "the class of people who are interested in aeronautics would naturally be of a character to act unfairly."[26] As it turned out, early aeronauts proved precisely to be the sort of people who might be inclined to act unfairly - individualistic, unconventional, egotistical, ambitious, and sometimes greedy, they were not known for their timidity in methods of gathering information or claiming credit for great accomplishment.

Yet neither Wilbur nor Orville Wright was so inclined. Partly because they had two, instead of one, able bodies and minds they did not need as individuals to make up for a lack of assistance by cultivating a manipulative or "hustling" attitude towards others. They trusted each other implicitly in the matter of money and credit, and shared a joint bank account long before they began work on flying machines. They simply had no reason or occasion ever to bicker about cash. But they were not indifferent to money either, or to the means by which they hoped to obtain so much of it that they would never have to give the matter another thought for the rest of their lives. That means was their common creation, the airplane.

In the lesser appetites of life (sex and money having been accounted for) the Wrights learned a kind of accomodating tolerance for each other, as when Wilbur quietly showed Carrie how to make smooth gravy for Orville, or in their

humorous dividing up of cooking responsibilities when Katharine went off to college in 1892. Wrote Wilbur to his sister,

> "We have been living fine since you left. Orville cooks one week and I cook the next. Orville's week we have bread and butter and meat and gravy and coffee three times a day. My week I give him more variety. You see that by the end of his week there is a big lot of cold meat stored up, so the first half of my week we have bread and butter and "hash" and coffee, and the last half we have bread and butter and eggs and sweet potatoes and coffee. We don't fuss a bit about whose week it is to cook. Perhaps the reason is evident. If Mrs. Jack Spratt had undertaken to cook all fat, I guess Jack wouldn't have kicked on cooking every other week either."[27]

They shared freely their clothing, business ventures, ideas, time - virtually anything which could be shared was shared. In November 1908 Wilbur turned down an award of the "Legion of Honor" by the French government unless one were awarded to Orville as well. In his will, Wilbur left specified amounts of money to each family member, but to Orville he simply left what was left (it was, of course, a sixeable sum), saying that

> "The entire balance and residue of my estate remaining after the satisfaction of the foregoing bequests...I give...to my brother Orville Wright, of Dayton, Ohio, who has been associated with me in all the hopes amd labors both of childhood and manhood, and who, I am sure, will use the property in very much the same manner as we would use it together in case we would both survive until old age. And for this reason I make no specific bequest to charity."[28]

Power was perhaps a more complicated issue for Wilbur and Orville, as some equilibrium of dominance and leadership had to be established. Absolute equality in all regards could only have been achieved under an obsessive sort of self-scrutiny which would have inhibited their style. We shall shortly examine the question of dominance in their relationship, for in the home of Bishop Wright of the UBC, the sharing of power was a more complex issue than the sharing of mere goods, which was generally a matter of course. Once the internal power balance was established between the brothers, though, the Wrights were an unshakable unity, all the more so as time went on and struggles with

competitors heated up.

By October 1904 Wilbur was writing to Chanute that he and Orville were ready to consider "what to do with our baby, now that we have it." They worked on it for another year, making sure it was indeed fully workable in banking turns and operable by a trained pilot. They they sought to find it a home. Their only conditions were that the new owner recognize and reward in a fair manner the true parents. But this proved very difficult to achieve. The net effect of two years of negotiating was a hardening and intensifying of the brothers' solidarity in the face of external difficulty, the transforming of competition by others into opposition, and a quite lasting distaste for big governments, big military organizations, and big business. A unified mistrust of all of these, rather than self-criticism or self-doubt, was the final shared conviction of the Wright brothers. Having been raised with cynicism toward such mass emotions as patriotism (the Wrights always had a low opinion of such outpourings as the Fourth of July), they were primed to discount out of hand any powerful person or agency which claimed to be acting from anything other than bald self-interest, which, when once admitted, earned only the credit of having admitted to the obvious. Some of this feeling was behind Orville's ambivalence about the Kitty Hawk monument being an imposition on the taxpayers, and was certainly behind Orville's much earlier anger in 1907 at the U.S. War Department for its apparent obstinacy in refusing to respond to the Wrights' offer of a sale to the American military. Writing very much in Wilbur's style, Orville stated the case for his mistrust in a letter to the Board of Ordnance and Fortification. Coming as it did from London (the brothers were trying to close a deal in Europe), the letter had an added quality of hurt and alienation:

> "When we suggested a conference in one of our letters to you last spring, we hoped that, by a frank exchange of views, misunderstandings could be removed, and a basis of agreement satisfactory to both parties arrived at.

> Our course in asking from governments large sums for the first machine has been based upon an impression that governments often appropriate inventions useful in warfare, and tell the inventor to prosecute a claim under the law. But, since the inventor, who has claims to prosecute before he has realized any money from his invention, must transfer the principal interest in his invention to capitalists in order to raise money to prosecute the claims, he does not derive much profit for himself, even after judgement in his favor has been obtained.
>
> If we can obtain assurances that we shall receive fair treatment, and that our patents will not be palpably disregarded by the government officials, we on our part will make every reasonable concession in order to provide a basis of agreement which it will be possible for your Board to accept. We care much more for an assurance of fair treatment than for an extreme price on the first machine."[29]

The ultimate success of the Wrights and the effects of the passing years did little to modify Orville's irritation at the inefficient thickness of bureaucracies. Writing in response to a New Orleans inventor trying to attract the attention of the military, he said in 1946,

> "I regret very much that I am not able to give advice that will be of value to you. After forty years' acquaintance with the ways of our departments of National defense I do not know any more about how to get them to take an interest in or to adopt valuable inventions than you do."[30]

It could be argued that the Wrights' problems with powerful institutions were to some degree self-created, stemming from the protective righteousness of their home background and their own apprenticeship in power and its abuses with their father in the U.P.C. The contribution of years of internal church warfare in this regard seems clear enough. It is less clear, though important to notice, the unifying force of sharing a common enemy or opposition. Just as the Wright family core of Milton, Katharine, Wilbur and Orville grew tighter under the stresses of Milton's troubles, so too did the "opposition" of governments, businessment, and competitors cement Orville and Wilbur and reinforce their feelings of solidarity. For they actually experienced competition as opposition, and saw what others would regard as expectable bureaucratic obduracy in terms of a more personalized subterfuge and hostility.

They lacked a sophisticated sense of the plain impersonality of power, that diffuse character of institutional power which has always frustrated those whose only experience of social influence has been at the personal or "human" level. In this sense they were not so much paranoid as confused and disappointed. Their cynicism grew over the years in direct proportion to their need to defend and preserve the clarity of their own position, and their suspiciousness always had an edge of bitterness to reveal how chagrined they were that mankind should be so often so indecent. Wilbur in particular felt this, as he was the more self-consciously "moral" of the two. His bitterness was often quite open and condemnatory, betraying a superior disgust towards self-promotion and dishonesty. Whenever he came across it his reaction was a sharp kind of "Aha!", as if he had just caught someone in the act of a cover-up. In spite of growing cynicism, he always registered a fresh surprise at discovering human weakness and immorality. Wilbur never quite accepted these things as part of the human condition. In June 1908, when Hart O. Berg suggested that the Wrights drop their connection with the Weiller business syndicate in France and deal instead with financial powers behind the newspaper "le Matin", Wilbur reacted with hostility at what he divined to be the shameful intentions of the newspapers' owners. He wrote to Orville,

> "Berg was fool enough to propose that we drop Weiller and mix it up with the Matin, but I stopped him in short order. He wanted to sell the Matin a machine for about $5,000, which the latter was to present to the French government with a great crowing over its own slickness and patriotism."[31]

A hyperalertness to being taken advantage of in "enemy territory" betrayed a certain Ohio boyish naivete about the world and a subsequent need to protect oneself in a mantle of cynicism and guardedness.

DYNAMIC TENSION

If similarities in everything from mechanical aptitude to moral outlook formed the basis of a solid working union between Orville and Wilbur, it was their opposite qualities which added force of motivation to the blend of likenesses. These opposite qualities rarely became a source of disagreement, but led instead to a complementary and productive tension. As with their likenesses, the brothers' points of complementation ranged acress a broad array of activities. Only the area of moral conduct seems to have been untouched by this process. Each brother probably reached a tacit understanding that any breach of the common adherence to the same set of moral standards, especially with regard to sexual behavior or attraction, would have brought the whole house down. They were doubtless less aware of the depth and nature of their own intimacy - each with the other - and the extent to which a powerful filial affection was thrown outward into the mastery of free flight and the creation of a most unique "baby".

The Wrights themselves were too pragmatic for any discussion of this sort, and they would have been as embarrassed as the next Daytonian of that day by any psychologizing about "filial affection", sublimated or otherwise. As Charles Taylor recalled. "The boys were always so matter-of-fact about things; and they never made any effort to get me excited ... They were always thinking of the next thing to do..."[32] Orville himself could not recall any particular emotion or sensation even at the historic flights of Dec. 17, 1903. "I was so interested in whether the thing would work or not that I did not have time to think about it or gather any impressions."[33] But let us proceed anyway, sifting what we can through the close sieve the Wrights left us, and looking first at their most notable legacy, that of intellectual/technical accomplishment.

Their interdependence in thought and work has always given rise to discussion of which brother was "the originator" of the airplane, or to which one should go the credit for various breakthroughs. Even in 1908 newspapers created a sort of friendly competition between Wilbur in France and Orville at Ft. Meyer around height and endurance records for their flights. Early on, they had decided to present a united front for public consumption, insisting on equally shared credit for all that they did. This was intended first and foremost as an honest statement to forestall any natural public tendency to set one brother up over the other. But it also served to prevent any wedge from being driven into the fraternal communality of their work, dividing the brothers or setting them to bickering and resentment about the laurels. The result is that we have very little (and no reliable) evidence of a direct sort linking either brother with any specific theoretical breakthrough, though evidence for credit in technical accomplishments is just a little less obscure. If Wilbur had lived, and if the whole story of the development of flight had been told in its full dimensions (i.e., including the personal) we might have had a better idea of the brothers' creative interaction. One author maintains that Wilbur was pushed into the background after 1912, and that Orville by a more or less conscious omission failed to correct a tendency by biographers to ascribe to him increasing amounts of credit over the years for the success of the brothers' efforts.[34] In this view, it seems to be implied that Orville rather than Wilbur should be in the background. Still other observers have simply abandoned the credit game, concluding with some good sense that it is impossible to separate out the individual components of so intimate a collaboration without leading to misrepresentation of the facts. Griffith Brewer, an Englishman who knew them well, remarked,

> "I have often been asked since those pioneer days, "Tell me Brewer, who was really the originator of those two?" In reply, I used first to say, "I think it was mostly Wilbur", and later, when I came to know Orville better, I said, "The thing could not have been done without Orville." Now when asked, I find I have to say, "I don't know." and I feel, the more I think of it, that it was only the wonderful combination of these two brothers, who devoted their lives together to this common object, that made the discovery of the art of flying possible."35

I feel obligated to add my own opinion on this matter, not from any need to establish a priority for either brother, but because I balk at the alleged impossibility of describing their work in any greater detail than it takes to say "Both were equally responsible". I take that for granted. What intrigues me is the nature of that complementary equality.

The first theoretical or conceptual breakthrough in the Wrights' thinking about flight was the notion that inherent stability in an aircraft was not only unnecessary but probably undesirable as well, for it would lessen the controlling power of the pilot. All prior experimenters had either insisted on designing a machine which would automatically stabilize in the air, or they had simply not come to grips with the problem at all. To leave the security of the idea that one's machine would be as solid in the air as a train on its tracks and to leap instead into the mind-set of the bird, whose motions are not rigidly stable but consist of a never-ending series of adjustments to the changing conditions of the wind - that was a major step forward. This idea probably grew out of Wilbur and Orville's discussions of Lilienthal's death in 1896, and as such it no doubt reflects both brothers' thinking. It is true that Wilbur, as speaker for the two, publicized this idea and that his name became associated with it. In those early years of 1896-1899 the whole subject seems to have been of much greater concern to Wilbur than to Orville. Probably Wilbur spent more of his free time thinking and "theorizing" on the subject than did his younger brother, who was quite satisfactorily engaged with the

bicycle business.

Second came the idea that varying the angles of incidence of the wings in reciprocal fashion could provide just the balance and counter-balance of lift forces required to insure lateral stability in the hands of a pilot. In later years Orville's biographer credited him with this discovery, which was in fact the first and major step in their achievement of full, 3-dimensional control. Kelly says plainly in his 1951 book, "Miracle at Kitty Hawk", that "Orville seems to have had a little the edge on Wilbur in the importance of suggestions offered: he was the first to think of the basic principle of presenting the right and left wings at different angles to the wind for lateral balance..."36 But Kelly does not say just where he gets this opinion. It is certainly not evident in the original Wright papers, and if it had been by some personal communication with Orville, such communication was never cited or footnoted as deserving the mention that such evidence would historically have required. I suspect that Kelly - and he was by no means alone in this - developed a sense of loyalty to the touchy and publicity-shy Orville, perhaps out of genuine admiration but also because any writer's admission to Orville's good graces always hung by a thread, and thus at times a strong temptation to court favor developed in those who wished to write at any length about Orville.

The only conclusion we can draw is that somehow one of the brothers emerged from their mutual discussions - it may well have been Orville - with this breakthrough idea. Orville was the first to devise a mechanical means of implementing the idea in an actual craft - a system of cogwheels and rods which proved too heavy for practical use. Finally, while Orville was off on a picnic and camping trip with Katharine and some mutual friends, Wilbur hit upon the successful idea of warping or twisting the wings as he manipulated a cardboard inner-tube box in the bicycle shop. From that point on, each was equally well-versed

in the craft's control system. When the Flyer got to the marketing stage in 1905, Orville seems to have had the principal hand in designing the mechanics of their control systems.

The third breakthrough was less of an insight than a matter of scientific will and determination, and the courage to conclude that previously published data by experts in the field was seriously in error. The discouraging 1901 season at Kitty Hawk left only the possibility that Lilienthal's data on the lifting power of aerofoils of various curvatures were wrong. As Orville pointed out years later, this was on the one hand devastating, since they had then no data base upon which to build their practical experiments; yet on the other hand it was encouraging, since it implied that with an accurate data base they might indeed succeed where others had failed.

When they arrived home, a wind tunnel was built by Orville in which the brothers began a series of experiments which lent the requisite precision to their glider. Flight began as much in that wind tunnel as on the sands of the Outer Banks, as such careful engineering had never before been brought to bear on the problems of lift and drag in the air. The idea of a wind tunnel was not new, but this particular use of the wind tunnel application was a first. Perhaps it was Orville who though that this would be a means of gathering accurate data - perhaps he did it on the train home whild trying to think of some way, as he later put it, "to keep Will in the flying business". At any rate, the initiative in this seems to have been his.

Next in the series of hurdles which required a totally novel thrust was the use of a moveable rear rudder to stabilize the glider in banking turns to the left and right. In the Fall of 1902 the Wrights had achieved a wing design that provided satisfactory lift to their glider and had added a fixed, vertical rudder at the rear to provide stability in turns - to prevent the

glider from spinning around its vertical axis in a turn. But their experiences with the fixed rudder were not what they had predicted. Instead of holding the craft steady through a turn, the tail was somehow helping to send it into what is now called a "tailspin" - "something causes one wing to stall out while the other is still producing lift, the airplane is spun about from the lifting force of the outer, faster-moving wing; and the machine rotates as it descends."[37] The Wrights called it "well-digging", a reference to their having had to plow through the sands to tap sources of fresh water for their camp. They knew that somehow the tail was needed, but could not figure out why it was causing the glider to react in this manner. It was both the problem and the solution to making successful, banked turns in the air.

On the night of October 2, 1902, Orville stayed up late, having had too much coffee during an evening's argument with Wilbur on the tail business. During this brief insomnia he figured out that the tail would have to be made moveable from side to side to provide the pilot with the capacity to compensate for the rotational force of a "tailspin".

> "In telling Wilbur at breakfast the next morning (October 3) about the idea that had come to him in the night (that is, to convert the vertical tail from a fixed vane to a rudder that could be moved - to recover lateral balance or to make a turn - toward the low wing, thus compensating for the increased drag imparted to the high wing by its greater angle of attack), Orville Wright first caught the eye of his brother Lorin to alert him that something important was about to be said and to warn him particularly to note Wilbur's reaction. Knowing Wilbur's unconscious habit of sometimes pushing his prerogatives as older brother and of assuming priority for himself in the conception of any new ideas, Orville fully expected his suggestion to be brushed aside with an "Oh, yes, I was already considering that." Instead, Wilbur listened attentively and remained silent for a minute or two. Then, without hesitation, he not only accepted the change but startled Orville by proposing the further bold modification of interconnecting the rudder wires with those of the wing warping so that by a single movement the operator could effect both controls."[38]

Clearly the two men were so close to a solution that no sooner did one hit upon it than the other hit upon an improvement. This moveable rear rudder

completed tha control system which made flight possible, for now the glider - still without a motor - could move in all three directions (roll, pitch, and yaw) under the directing hand of the pilot.

The two remaining elements in the creation of the Flyer were the engine and the propellers. Both Wrights were equally skilled in engine design and function, though Orville seems to have enjoyed this aspect of the work more than Wilbur, and had more "hands on" experience with motors. They designed their own engine and built it from an aluminum alloy in April and May of 1903. Charles Taylor has long been undercredited for a good deal of the actual machine work in building this motor, but its design was by the Wrights. Several engine companies had proved unable to come up with a motor combining sufficient lightness with sufficient power, so the Wrights had to make their own.

The propellers were perhaps the quietest and least obvious achievement of the brothers, and yet in a real sense this was their most "intellectual" effort. Firts, the whole idea that a propeller was really a rotating "wing" surface or aerofoil had been proposed already in Europe in a 1900 paper by Stefan Drzewiecki, and a second important component in propeller theory had been separately outlined by two other men, Rankine and Froude. This was the "momentum theory, which took into account the effect on propeller thrust of the accelerating mass of air through which the blade is about to pass. The Wrights were the first to combine these two aspects of theory to form a comprehensive basis for the construction of maximally efficient propellers. Harry Combs, a life-long aviator, recent president of Gates Learjet, and author of a book on the Wrights, describes the Wrights' process of solution:

> "After using the most perfect airfoil and arriving at the best angle of attack and blade width, they then had to compute the comparative loss of blade performance. Wilbur worked out such details as the

differential between the theoretical tangential angle of pressure exerted by the airfoil in its motion to the normal line of pressure generated by the airfoil in relationship with its chord, for a given amount of torque to be overcome, from which there would develop a certain poundage of thrust. The brothers worked out angles they needed by applying various angle data to a graph computed on the basis of the foot-per-second speed of the rotation of the propeller.

They applied their accumulated data to their graphs and plotted the probable effects of these various forces in miles per hour, or their minimum flying speed. They could then determine that with this differential they would sustain an approximate blade performance loss of 30 percent. Their charts and formulas lent themselves to the calculation of what the Wrights labeled "throwdown", slippage caused by the normal compressibility and out-around effects of flowing air on the propeller blades.

By developing still another formula, they were able to superimpose these data on the graph showing throwdown loss. The only route to establishing this formula for throwdown was by the solution of elaborate quadratic equations. The Wrights, with no formal training, were able to express abstruse and complicated physical concepts and principles in the form of these equations.

The calculations, which we would expect to find in the most modern aerodynamics laboratory staffed by experienced engineers and scientists, and backed by expensive computers and other electronic giants, appeared in the pioneering work of the Wrights in 1903."[39]

The whole process, from the inception of the idea to the completion of two propellers of laminated spruce, took only a few months. One author[40] has credited to Wilbur the breakthrough thinking on the propeller problem, but this is more a matter of opinion than documented or verifiable fact. It is impossible to assign particular credit in this instance.

Well, so much for the credit game. The available evidence does not justify much further separation of the Wrights' labors. We look now at the process of their intellectual work together. Wilbur gave us a clue to the dynamic power of this togetherness in an article written just before his death and published in the "Bulletin" of the Aero Club of America, September, 1912. The question he addressed was whether Lilienthal or any other pre-Wright investigator would have succeeded if not for accidents cutting short their lives. Wilbur's answer was basically "No."

> "The problem was so vast and many-sided that no one could hope to win unless he possessed unusual ability to grasp the essential points, and to ignore the nonessentials ...When the detailed story is written of the means by which success in human flight was finally attained, it will be seen that this success was not won by spending more time than others had spent, nor by taking greater risks than others had taken.
>
> Those who failed for lack of time had already used more time than was necessary; those who failed for lack of money had already spent more money than was necessary; and those who were cut off by accident had previously enjoyed as many lucky escapes as reasonably could be expected."[41]

The secret, then, lay in an intellectual power of a particular sort - the ability for quick differentiation of essentials from nonessentials, to maintain perspective on a problem, to keep one's ego invested but not over-invested in any particular line of thought, to keep one's eye on that crucial balance point between technical detail and the larger theoretical issue. Putting it simply, Orville's forte lay just beyond this balance point in the direction of technical detail, while Wilbur's lay just beyond in the opposite direction, that of theory. This is not to say that Orville lacked a comprehensive grasp of the larger picture, or that Wilbur was indifferent to the value of detail. Each was fully capable of excellent work in both areas. Yet, if left to their own devices, each would have drifted by inclination away from that crucial balance and toward one end of the scale or the other. This happened to Orville after Wilbur died, and was probably characteristic of Wilbur prior to his active working years with Orville, when he spent a good portion of his late teen and early adult years absorbed in solitary thought in his father's library at 7 Hawthorn St. When paired together, though, they "balanced up perfectly", as Charles Taylor once said of their 1903 crankshaft.

This balance concept implies not a rigid or fixed way of solving problems but rather an inherent instability - a tense give-and-take in which balance is maintained precisely by a fine tuning of one's efforts to the efforts of the other. This explains, in part, the vociferousness of their arguments as well

as their necessity, and explains also the fact that these arguments never grew ugly or personal. Charles Taylor remembered that

> "Both the boys had tempers, but no matter how angry they ever got, I never heard them use a profane word ... The boys were working out a lot of theory in those days, and occasionally they would get into terrific arguments. They'd shout at each other something terrible. I don't think they really got mad, but they sure got awfully hot.
>
> One morning following the worst argument I ever heard, Orv came in and said he guessed he'd been wrong and they ought to do it Will's way. A few minutes later Will came in and said he'd been thinking it over and perhaps Orv was right. First thing I knew they were arguing the thing all over again, only this time they had switched ideas. When they were through, though, they knew where they were and could go ahead with the job."[42]

Taylor and Carrie Kaylor may have been the first to notice the back-and-forth nature of the brothers' arguments, but they were not the last. (Carrie, at first, was a bit frightened by the loudness of the exchanges, and remembered seeing Will and Orv in the living room during the evenings, seated on each side of the fireplane, Orv sitting straight up with arms folded across his chest and Will slouched down with his legs stretched out in front, hands clasped behind his head. "After a while one of them would say, 'Tisn't either;' and the other would say, 'Tis too.' After keeping that up for a time, they'd swing back into the full-size argument."[43] Years later, Griffith Brewer noted the argumentative style of the Wrights:

> "In the arguments, if one brother took one view, the other brother took the opposite view as a matter of course, and the subject was thrashed to pieces until a mutually acceptable result remained."[44]

And General Benjamin Foulois, who when a lieutenant accompanied Orville on his successful Army trial flight in northern Virginia in 1909, recalled that the brothers would

> "pick up the ends and parts and reassociate them as though there had been no difference of opinion whatever. Both knew instinctively what parts contributed to gaining their ultimate end."[45]

Arnold Fordyce, involved in business negotiations with the Wrights in 1906, noted

> "Another peculiar thing about their lives is that they have always disagreed in the matter of inventions, the one trying always to disprove the theories of the other. That seems to be the reason they have succeeded so well. If Wilbur made up his mind that a certain motor was the thing, Orville would insist that it was not, and Wilbur had to prove that he was right."[46]

Like the small boy at Kitty Hawk in Dec. 1903 who ran away in fright over the dunes at the explosive cacophony of the Flyer's unmuffled engine, observers of the Wrights' arguments were often confused or even alarmed by the level of energy involved. Yet it was just that energy which, controlled and balanced by the fine complementation of their individual intellectual styles, propelled them to the successful solution of the flight problem in so short a time. As Wilbur explained to the intimated George Spratt in 1903, "I see you are back at your old trick of giving up before you are half beaten in an argument. I felt pretty certain of my own ground but was anticipating the pleasure of a good scrap before the matter was settled. Discussion brings out new ways of looking at things and helps to round off the corners."[47] Orville's softer letter to Spratt a couple of months later also espoused the benefits of intellectual argument: "You doubtless will make some mistakes, just as we do, and just as everybody else does, but if we all worked on the assumption that what is accepted as true is really true, there would be little hope of advance."[48]

If Orville's aptitudes had been solely mechanical while Wilbur's had been exclusively theoretical, the balance between the two would have been a less dynamic and productive one. It was precisely the capacity of each to force the other into a maximal utilization of the full range of his intellectual potential that made the fraternity creative, and which struck others at times as so "violent". Anything which interfered with this balance interfered with their efficiency, which is why Chanute's offers to send his own associates and

proteges to Kitty Hawk to "help" the Wrights were never welcomed. Said Wilbur to Chanute in 1902, "...it was our experience last year that my brother and myself, while alone, or nearly so, could do more work in one week, than in two weeks after Mr. Huffaker's arrival."[49] The reason was not that they were obligated to help Huffaker with his own projects, or that Huffaker was clumsy, or offensive. The main interference was with the long hours of thought during the evenings and during when bad weather prevented active gliding experimentation. Bad weather might disrupt gliding, but it did not disrupt the tension of complementary thought between Orville and Wilbur. Intrusive visitors did.

One could ask if an inherent imbalance in the cognitive makeup of each brother were necessary to create a powerful working team. Could not each have been well-balanced as individuals between attention to detail and enjoyment of theory, and still have formed a dynamic unity? Certainly this might have occurred, but I think it was not true of the Wrights. If it had been the case, each would have been individually more productive during those periods in his life when active fraternal collaboration was not that strong. Prior to teaming up with Orville in the publishing business, Wilbur's life had been one of very limited accomplishment, even underachievement, and after Wilbur's death Orville's productivity narrowed in scope very dramatically. The mutual intellectual stimulation of someone who almost sees things the way you do, but not quite, is a strong goad to interaction. With the Wrights, differences were not merely opposite sides of an issue, but just barely dissimilar viewpoints which cried out for resolution - the feeling that the other person had some truth which escaped one's own reasoning, and vice-versa, and that the total truth hinged on the discrepancy.

Unfortunately, it is difficult to find specific incidents of disagreement between Orville and Wilbur where one could find illustration of their

differing approaches to an issue. Certainly a good portion of their disagreements focused on either a technical point or a theoretical point, and thus not all of their arguments reflected in a direct way the slight variations in outlook. Yet every stage in the development of the Flyer called for the closest association of aeronautical theory and engineering skill - so much so that simple armchair reasoning or, conversely, purely empirical "cut-and-try" approaches, would never have solved the problems. It is important to note that on any issue, such as wing-warping, use of the vertical rudder, or the theory of propeller thrust, Orville and Wilbur were never very far apart and "danced around" the truth until it came out, clear to each of them.

Apart from aeronautical problems, there were indications that Orville sometimes found it difficult to make certain discretionary decisions, that he found it difficult to set priorities and to move without distraction toward a goal - to separate essentials from non-essentials, in other words. This prompted Wilbur to "talk down" to him at times, which Orville resented, but at the same time he seemed to ask for such guidance. When Orville was in Washington in the Fall of 1908 to demonstrate the Flyer for the U.S. Army, he received a letter of advice from his older brother in France:

> "Do not let yourself be forced into doing anything before you are ready. Be very cautious and proceed slowly in attempting flights in the middle of the day when wind gusts are frequent. Let it be understood that you wish to practice rather than give demonstrations and that you intend to do it in your own way. Do not let people talk to you all day and all night. It will wear you out, before you are ready for real business. Courtesy has limits. If necessary appoint some hour in the day time and refuse absolutely to receive visitors even for a minute at other times. Do not receive any one after 8 o'clock at night ... I can only say be extraordinarily cautious. Choose your own times. Good luck." 50

As Wilbur's letter made its slow but timely way across the Atlantic, Orville complained to Katharine,

> "I haven't done a lick of work since I have been here. I have to give my time to answering the ten thousand fool questions people ask about the machine. There are a number of people standing about the whole day long. ... You can't find a minute to be alone ... I have trouble in getting enough sleep."[51]

In November, 1908, when Orville was recuperating at home after six weeks in the Army hospital at Ft. Meyer, he complained to Wilbur about answering the hundreds of letters he had received from well-wishers. Unable to decide which to answer, he found himself procreastinating and resenting the task. Wilbur's advice was clear enough: "Throw the letters in the fire. You can't answer 500."[52]

Interestingly, Wilbur's concern over Orville was that he would be so distracted by details of various kinds - social, government and business, courtesy calls, press interviews - that he would overlook the more important details of the airplane's assembly. The larger mission, in other words, would be undone by attention paid unnecessarily to irrelevent details. This was one of Wilbur's chief regrets following the Sept. 17th accident which killed Lt. Selfridge and nearly killed Orville - that he had not been on hand to insure Orville sufficient breathing room to get on with the task of assembling and flying the plane.[53] Wilbur's advice came out of his own experience at LeMans. He had had trouble guarding his privacy and preserving his powers of concentration, and he had had, as Orville had not, the benefit of an official "buffer" in Hart O. Berg, Flint Co.'s business representative in Europe handling the Wrights' work.

Implicit in all this complementarity is a notion that perhaps Orville was more dependent on Wilbur, psychologically speaking, than vice-versa - that underlying a nice balance of intellectual styles and abilities was an emotional relation of a younger brother to his more structuring, directive, even paternalistic older brother. I think there was a definite power relation between the

two brothers, and that Wilbur's was the more dominant and forceful personality. This is most obvious in the deference which Orville showed Wilbur in the matter of his teasing and practical jokes, and in the fact that he endured two seasons of experimenting at Kitty Hawk in 1900 and 1901, plus all the months of involvement between gliding seasons, before making his first glides in 1902. He initially stood on the sidelines when it came to actual gliding and patiently waited for Wilbur to decide the time when it would be appropriate for him to begin the actual glider work. Though mutually committed to the investigation of flight, the brothers differed in the quality and intensity of their motivations. Wilbur was firmly out to prove something about his abilities and strengths, and to "find himelf" in a professional/occupational identity. Orville, on the other hand, seems to have lacked this type of intense inner drive. To a great extent he simply went along for the ride, and for the enjoyment he derived from tackling problems of a mechanical nature. Though sensitive to being placed in a secondary position by Wilbur, he nonetheless rarely pushed for any greater a role than Wilbur was ready to allow. In this matter, Orville's role grew in direct proportion to Wilbur's sense of personal mastery and competence, and as these traits rapidly flowered in Wilbur's character Orville's role was very nearly that of an exact equal all the time. Orville's patience and good humor allowed him to bear with good grace Wilbur's sometimes autocratic manner. His demands in the matter of dominance were simple - that Wilbur stop referring to "I" in his personal correspondence about flight and begin using "we". That happened very early on, and that is also a major reason that the "credit game" is so muddled.

Despite the outward appearance of equality and unity and even an inner sense of mutual indebtedness and respect, there remained differences of temperament between Wilbur and Orville which necessitated a somewhat lop-sided

compromise in their interpersonal economy of power. Wilbur was his father's son - kind but autocratic, open to challenge but righteous and defensive intellectually, and very invested in the integrity and power of ideas. Orville was perhaps more like his mother (though we know practically nothing about her) - calm or even indifferent towards the righteous assertion and defense of ideas as a central mission of life, appreciative of workmanship and the satisfactions of manual/mechanical mastery, dedicated more to utility than to ideation, and more or less reconciled to socially compliant positions (such as late-Victorian minister's wife, or youngest brother).

These differences allowed for successful compromises and dependencies, but there were some rare times when things got heated in a personal way and revealed what each felt to be the other's weak points. One such time was that stressful Spring of 1908 when hurried practices on short notice at Kitty Hawk prior to the make-or-break demonstrations of the Flyer in the Fall frazzled their nerves and made them impatient. Orville thought that Wilbur had a tendency to get "rattled" under stress, recalling perhaps the "nerves" which had invalided Wilbur after his hockey accident in 1885. Wilbur, on the other hand, thought that Orville was easily distracted and could grow careless when competing demands were made on his time. In this he revealed what may have been a basic unsureness of Orville's self-discipline. Each knew the other's weak spots but never attacked directly. Katharine was most often the recipient or intermediary of any fraternal friction, as each brother felt free to entrust to her his misgivings or frustrations about the other. Direct, personalized arguments rarely occurred between them. The reason was simple enough - they were decent, restrained men who loved each other and look instinctively towards reason as the most powerful arbiter of any dispute.

In 1907, during the trans-Atlantic correspondence between Orville and Wilbur while the latter was trying to close a deal in France for sale of the

Flyer, the close and advisory and consultative relation which usually existed between proved logistically impossible. Efforts to "think as one" were frustrated by the sheer impediments of time and distance, as letters and cablegrams crossed en route. Wilbur's temper flared quite often when immediate answers were not forthcoming from Orville, and he felt keenly the absence of his younger brother's opinion and counsel. Their financial future was riding in the balance, and poor Katharine became so distraught over the tension that she suffered partial hair loss as a result of the stress. Orville was generally patient, but finally could no longer take any more of Wilbur's judgementalism. He complained to Wilbur, and finally they agreed that Orville should join Wilbur in Paris. On Sunday, July 28, Orville arrived in Paris with Charles Taylor, having vowed on board the "Philadelphia" in a letter to Katharine to "raise a row with Wilbur when I get there."[54]

For whatever reason, Orville left America without recording his brother's address in Paris. He wrote Katharine from the ship, "I forgot to bring Will's hotel address with me but I will probably have no trouble in finding it." He was lucky and did manage to find the hotel Meurice. We don't know how much of a row he raised with Wilbur. Probably they were vastly more comforted by each other's presence than incited by the opportunity to quarrel face-to-face.

Wilbur's reluctance and ultimately his inability to bargain without the close advice of his brother suggests that the dependency was a two-way affair, and that behind the apparent dominance of Wilbur and the apparent deference of Orville was a rather strong degree of interdependence. As with dance partners, the one taking the lead was not thereby the "more important", nor did taking the lead imply in itself a greater degree of personal independence.

Yet by virtue of his asceticism, his committment to self-mastery and self-control, and his prolonged adolescent loneliness, Wilbur emerged into

adulthood as the more emotionally self-sufficient of the two. Apart from his relation to Orville, Wilbur kept a certain emotional distance between himself and others, even family members. Orville, on the other hand, was less concerned with proving psychological invulnerability and was therefore quite close not only to Wilbur but also and especially to sister Katharine. Where Orville was socially genial and agreeable, Wilbur was reticent and guarded. When Wilbur arrived in London on May 26, 1907 to meet Hart O. Berg, Berg offered his impressions of the cautious Daytonian to Flint in New York:

> "At 12:30 yesterday I met Mr. Wilbur Wright at Euston Station. I have never seen a picture of him, or had him described to me in any way, still he was the first man I spoke to, and either I am a Sherlock Holmes, or Wright has that peculiar glint of genius in his eye which left no doubt in my mind as to who he was ... He arrived with nothing but a bag, about the size of a music role, but mildly suggested ... he thought it might be advisable for him to buy another suite of clothes. I fortunately found a shop open in the Strand, for it was Saturday afternoon, and fixed him up, at least for evening wear, as he came to the conclusion that he'd "guess he'd better have a swaller-tail coat." We spent the entire afternoon together. ...After a long talk,...I believe, please note that I say distinctly "I believe", that I made something of an impression as regards the impossibility of getting any sort of action in the near future from any government.
>
> ...About 5 o'clock in the afternoon, I think, you will distinctly note that I say "I think", I brought about some sort of action in his mind, and I think he was on the point, you will note that I say that "I think he was on the point", of veering around from the government to company methods. ...
>
> I think he agreed, you will note that I distinctly say "I think he agreed", to go to Paris with me Monday. I am to see him again at 1 o'clock today, Sunday, and I think I shall be able, you will kindly note that I distinctly say that "I think I will be able", to get a more distinct impression from him of what he wants than resulted in my efforts of yesterday."

Thinking that Wilbur's homespun, almost clerical, severity and conservatism would be good public relations material for Fling & Co.'s efforts to market the airplane, Berg closed his letter:

> "I am much pleased with Wright's personality. He inspires great confidence and I am sure that he will be a capital Exhibit A."[55]

Two months later, Wilbur revealed his extraordinary perceptiveness and his inclination towards mastery and power in a letter to Katharine:

> "When I first came over, Berg and Cordley thought that they were the businessmen and I was merely a sort of exhibit. But their eyes have gradually opened, and now they realize that I see into situations deeper than they do, that my judgement is more often sound, and that I intend to run them rather than have them run me... Now I control everything and they give me advice and assistance.
>
> It is amusing to me to see that Cordley and Berg are afraid to leave Orville and me to settle the commission business with Flint in New York. They feel certain that we could do as we pleased with him, if Cordley was not there to steady him. Cordley is really the best business man of the crowd. Flint and Berg are merely "hustlers."
>
> You people at home must stop worrying! There is no need of it. Orville & I can take care of ourselves all right, and we will be found on top when the smoke has cleared away."[56]

Wilbur's descriptions of business and contract negotiations were always painted in the colors of religious evangelism ("their eyes have gradually opened") and physical combat ("when the smoke has cleared away", etc.) - metaphors as uncharacteristic of Orville as Orville's self-deprecation and vulnerable geniality would have been of Wilbur. But if this ascetic aggressiveness was not part of Orville's character, neither was it rejected by him in others or found to be distasteful. In fact, he appeared generally indifferent to it. It was seen as Wilbur's province. He agreed with Wilbur totally in their assessments of others' intentions and in their plans for carrying on the business. In this realm there were simply no differences of note between them. Wilbur's perception of the business world as an aggressive, "hustling" place of predation and economic Darwinsim was not a perception Orville would have formed on his own, but once formed by Wilbur he agreed with it and followed its natural course of action. By himself, Orville simply would not have given a great deal of thought to the whole issue of the larger business picture. In fact, he withdrew from it completely after Wilbur's death. Bishop Wright's estimation of Orville's dependence on Wilbur may have been a bit overdrawn, but in August of 1908 it was a mildly prophetic appraisal. Warning Wilbur against

unnecessary risks in balloon flights, he said, "Outside of your contracts and aviations, you have much that no one else can do so well. And, alone, Orville would be crippled and burdened."[57]

Wilbur's aggressivity provided much of the motive power for the whole Wright enterprise, and Orville's accomodating tolerance allowed this aggressivity to develop undisturbed by any special rivalry or resentment. It was not merely a matter of not offering resistance, nor was it a matter of Orville's cheering Wilbur from the sidelines. Orville's characteristic detachment from any power or aggression issue - his near indifference to it as an adult - allowed him to cooperate fully in the details of the Wright business negotiations without being drawn into any strong personal initiative on the larger issues of getting the business rolling. Taking action based on opinion or belief had been a unique feature of Bishop Wright's life and of Wilbur's life as well. It had never been a favorite activity for Orville, whose actions and interests were decidedly less ideological.

Though Orville shared his brother's mistrust of the world of "big business" and politics, his response as an individual was not to wage righteous warfare but to find some way to get out of the complicated mess with a sense of private peace. Kelly describes Orville's attitudes toward the Wright company in 1914:

> "Orville had not been happy as a gusiness executive and without Wilbur, he was less so. Most of the stockholders in The Wright Company were Tammany men and Orville thought he saw signs of their using the company for political purposes. For example, they wanted to hire a certain lawyer because he was believed to be close to President Woodrow Wilson, not because his services were needed by the company. This annoyed Orville and his associates were irritated by him, too, because he wouldn't "play ball." So he offered to buy them out, guaranteeing that, including their dividends, they would have received one hundred per cent profit on their investment. Oddly, in buying out other shareholders he found it necessary to borrow money - the only time he ever did in connection with aviation. His borrowing was not for long, however, for he resold the company soon afterward. Since aviation as a business was showing greater promise than ever before, he made a handsome profit on the resale, and this was the source of the greater part of his fortune."[58]

It is hard to imagine Wilbur pulling out of so grand an opportunity to see that justice prevail over corruption and venality. Both brothers shared the same assumptions about honesty and justice in human affairs, but their individual responses in situations which challenged these assumptions were quite different. Had Wilbur lived, he very likely would have assumed the "larger role" of company spokesman and guardian/historian to the development of flight, spending time in experimental work as an important but secondary effort. Even though it had been his expressed interest to do primarily the latter, characterologically he would have been unable to resist the battlefields of the former. Yet with Wilbur "covering" the company, Orville would have retreated less into the background of aviation, and their contributions - certainly Orville's contribution - would have been that much greater.

As it was, the role of spokesman/historian fell to the brother least inclined and least willing to fulfill it. The interdependence of the Wright brothers was as closely balanced and functional as the airplane itself. To have expected either one to work as effectively alone would have been to expect a plane to fly as well on one engine as on two. Without Orville, Wilbur would have become a brooding, defensive idealogue; without Wilbur, Orville became an uninspired, rather minor inventor.

On December 22, 1903, Bishop Wright announced the success of his sons in terms whose accuracy stands up even under the scrutiny of a retro-speculative psychology:

> "Wilbur is 36, Orville 32, and they are as inseparable as twins. For several years they have read up on aeronautics as a physician would read his books, and they have studied, discussed, and experimented together. Natural workmen, they have invented, constructed, and operated their gliders, and finally their "Wright Flyer" jointly, all at their own personal expense. About equal credit is due each."[59]

NOTES * CHAPTER I

1. Charles Gibbs-Smith, "The Wright Brothers: The Family Background of the American Pioneers in Aviation," History Today (February 1974), p. 128.

2. H.A. Thompson, Our Bishops: a Sketch of the origin and growth of the Church of the United Brethren in Christ as Shown in the Lives of its Distinguished Leaders (Chicago, 1889), p. 528-529.

3. ibid.

4. ibid.

5. Paul Koontz and Walter Roush, The Bishops: Church of the United Brethren in Christ (Dayton, 1950), p. 63-64.

6. ibid., p. 64

7. ibid., p. 63

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